



บรรณานุกรม

1. จรรย์ สันทลักษ์ณา. สถิติวิเคราะห์ และวางแผนงานวิจัย. พิมพ์ครั้งที่ 3, สำนักพิมพ์-
ไทยวัฒนาพานิช, กรุงเทพฯ, 2519.
2. ทศนิยม อัดตะนันท์ และ F.N. Ponnampereuma. "การปรับปรุงแก้ไขดินเอซิลซัลเฟตของ
ประเทศไทย." วารสารวิทยาศาสตร์เกษตร 5 (2515): 17-24.
3. พงษ์ศิริ ใบบอดุลย์, ประภัสสร เพชรบุรณิน, นวลศรี ทยาพัชร และ ประยูร ตีมา.
"สารมีพิษตกค้างในดิน." รายงานผลการค้นคว้าทดลองและวิจัย. กรมวิขา-
การเกษตร, กรุงเทพฯ, 2523.
4. วณี ยงอำพรพิทย์. "บทบาทของสัตว์ในดินบางชนิดต่อการเพิ่มธาตุอาหารของพืช."
วิทยานิพนธ์ปริญญาโทมหาบัณฑิต ภาควิชาชีววิทยา บัณฑิตวิทยาลัย จุฬาลงกรณ์-
มหาวิทยาลัย, 2525.
5. สิริวัฒน์ วงษ์ศิริ. ยาฆ่าแมลง. พิมพ์ครั้งที่ 2, หน้า 136-137, นำอักษรการพิมพ์,
กรุงเทพฯ 2523.
6. _____ "การสำรวจแมลงศัตรูพืชที่สำคัญของพืชเศรษฐกิจ และการใช้สารเคมีกำจัด
ศัตรูพืชในพื้นที่การชลประทาน โครงการป่าสักใต้." ภาควิชาชีววิทยา
คณะวิทยาศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย, 2524.
7. Abdellatif, M.A. and H.T. Reynolds. "Toxic effect of Granulated
Disulfoton on Soil Arthropods." Econ. Entomol. 60 (1967):
281.
8. Alessandrini, M.E. "Insecticide residues in olives oils and table
oils from effort to control the olive fly." Residue Review
1 (1962): 92-111.
9. Bache, C.A. and D.J. Lisk. "Determination of Oxidative Metabolite
of Dimethoate and Thimate in Soil by Emission Spectroscopic
Gas Chromatography." Journal of the A.O.A.C. 49 (1966):
647-650.

10. Bauer, K. "Studien über Nebenwirkungen von Pflanzenschutzmitteln auf die Bodenfauna." Mitt. Biol. Bund. Landwirt Fostwirt Berlin-Dahlem 112, 1 (1964).
11. Berlese, K. "Apparechio Per Ruccogliere Presto Ed. in Gran Numero Piccoli Artropodi " Redia 2 (1905): 9-85.
12. Bohn, W.B. "The Dissappearance of Dimethoate from Soil." Econ. Entomol. 57 (1964): 798-799.
13. Brady, U.E. and B.W. Arthur. "Biological and Chemical Properties of Dimethoate and Related Derivatives." Econ. Entomol. 56 (1963): 477-482.
14. Brayer, J.F. "Decomposer Invertebrate Population in U.S. Forest Biomass." Pedobiologia 17 (1977): 89-96.
15. Bulloch, W.S. Practical Invertebrate Anatomy, pp. 236-239 and 260-263, St. Martin Press, New York, 1958.
16. Chamberlain, W.F., P.F. Gatterdam and D.E. Hopkins. "The Metabolism of P³²-labeled Dimethoate in Sheep." Econ. Entomol. 54 (1961): 733-740.
17. Crossley, Jr. D.A. and Hoglund, M.P. "A Litter-Bag Method for the Study of Microarthropods Inhabiting Leaf Litter." Ecology. 43 (1962): 571-573.
18. Dauterman, W.C., J.E. Casida, J.B. Knaak and Tadeusz Kowalezyk. "Bovine Metabolism of Organophosphorus Insecticide. Metabolism and Residues Associated with Oral Administration of Dimethoate to Rats and Three Lactating Cows." Agr. Food. Chem. 7 (1959): 188-193.
19. Dauterman, W.C., J.E. Casida, G.B. Viado and R.D. O'Brien. "Persistence of Dimethoate and Metabolites Following Foliar Application to Plants." Agr. Food. Chem. 8 (1960): 115-119.

20. Edwards, C.A. "Insecticide residues in Soils." Residue Review 13 (1966): 83-131.
21. Edwards, C.A., A.R. Thompson and J.R. Lofly. "Changes in Soil Invertebrate Populations Caused by some Organophosphate Insecticides." Proc. 4th Brit. Insecticide Conf., p. 48, 1967.
22. Edwards, C.A. and Thompson. "Pesticides and the Soilfauna." Residue Review 45 (1972): 1-80.
23. Finney, D.J. and F. Tattersfield in Probit Analysis 3rd ed., pp. 1-318. Cambridge University Press, London, 1957.
24. Giang, A.P., Donald A. George, Kenneth C. Walker and Robert F. Murphy." Colorimetric Determination of Dimethoate Residues in Plants and Milk." Agr. Food. Chem. 14 (1966): 371-374.
25. Gerolt, P. "Investigation into the Problem of Insecticide Sorption by Soils." Bull. World Health Org. No. 24, 577, 1961.
26. Griffith, D.C. and R. Bardner. "Organophosphorus and Carbamate Insecticide as Soil Treatments for the Control of Wireworms." Ann. Applied Biol. 54 (1964): 241-243.
27. Griffith, D.C., F. Raw and J.R. Lofty. "The Effect on Soilfauna of Insecticides Tested Against Wireworms in Wheat." Ann. Applied Biol. 60 (1967): 479-482.
28. Gunther, F.A., W.H. Ewart, J.H. Barkley and R.T. Murphy. "Persistence of Residues of Dimethoate on and in Mature Valencia Oranges and in Laboratory Processed Citrus Pulps Cattle Feed." Agr. Food. Chem. 13 (1963): 548-552.
29. Hortenstir, R.C. "The Effect of DDT and Malathion upon Forest Soil Arthropods." Econ. Entomol. 52 (1960): 357-360.
30. Hyche, L.L. "Control of Mites Infesting Earthworm Beds." Econ. Entomol. 49 (1956): 409-412.

31. Jackson, M.L. "Soil Chemical Analysis." Prentice Hall, Inc.
Engewood Cliffs, Newjersey, 1958.
32. Krantz, G.W. A Mannual of Acarology. p. 5 and 55, O.S.O. Book
Stores Inc., Corvallis, U.S.A., 1971.
33. Kevan, D.K. Soil Animal. (Russel John), p. 365, Northumberland
Press Limited, London, 1962.
34. Martin, Hubert. Pesticide manual (British Crop.) 2nd ed.,
Protection Council, London, 1971.
35. Matsumara, Fumio. Toxicology of Insecticide. Plenum Press,
New York, 1976.
36. Nelson, K.A., R.F. Menzor and L.P. Ditman. "Dimethoate Residue in
Leafly Crop." Econ. Entomol. 59 (1960): 404-407.
37. Santi, R. and R. Giacomelli. "Metabolic Fate of P³²-Labeled
Dimethoate in Olive Fruits and some Toxicological Implica-
tion". Agr. Food. Chem. 10 (1962): 48-52.
38. Sherman Martin, Ernest Ross, E.F. Scanchez and M.T.Y. Chang."
Chronic Toxicity of Dimethoate to Hens." Econ. Entomol.
56 (1963): 10-15.
39. Standen, V. "The Life Cycle and Annual Production of Trichoniscus
pusillus pusillus (Crustacea: Isopoda) in a Chesstive Wood."
Pedobiologia (1973): 273-291.
40. Tsumuki Hisaaki, Tetsuo Saito, Tadashi Miyata and Kisabu Iyatomi.
Acute and Subacute Toxicity of Organophosphorus Insecti-
cides to Mammals in Biochemical Toxicology of Insecticides,
(O'Brien, R.D. and Isuru Yamamoto ed.) p. 65-73. Academic
Press, New York, 1970.
41. Uchida, Tetsuo, W.C. Dauterman and R.D. O'Brien. "The Metabolism
of Dimethoate by Vertebrate Tissue". Agr. Food. Chem.
12 (1964): 48-52.

42. Wallwork, J.A. Ecology of Soil Animals, p. 80-89, Mc Graw Hill, London, 1970.
43. Way, M.J. and N.E.A. Scopes. "Studies on the Persistence and Effect on Soilfauna of Some Soil Applied Systemic Insecticides." Ann. Applied Biol. 62 (1968): 199-203.
44. Woodham D.W., Jessie C. Hotchett and Charles A. Bond. "Comparison of Dimethoate and Dimethoate Residues in Citrus Leaves and Grapefruit Following Foliar Treatment with Dimethoate Wettable Powder with and without Surfactant." Agr. Food. Chem. 22 (1974): 239-241.



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ภาคผนวก

การวิเคราะห์ทางสถิติ

1. Probit analysis (Finney, 1964)

วิธีการทางสถิติที่ง่าย และสะดวกสำหรับสร้างสมการเส้นตรงจากข้อมูลทางชีววิทยาที่มีการกระจายสูง คือ การวิเคราะห์ของ probit analysis ด้วยการใช่วิธีอันเหมาะสมนี้ เราสามารถประเมินค่า LC_{50} ของสารกำจัดแมลงต่อแมลงทางดีได้

ในการคำนวณเพื่อทำการวิเคราะห์ ให้เตรียมตารางซึ่งแบ่งออกเป็น 11 แถว สำหรับค่าของ λ , x , n , r , p , empirical probit, Y , nw , y , nwx และ nwy

1. ในแถว λ แสดงความเข้มข้นของโตเมโรเอท มีหน่วยเป็น ppm.
2. ในแถว x แสดงค่า $\log \lambda$
3. ในแถว n แสดงจำนวนสัตว์ทดลองที่ใช้ในการทดลอง ในที่นี้ใช้แมลงทางดี มีหน่วยเป็นตัว และแถว r แสดงจำนวนสัตว์ทดลองที่ตายเนื่องจากการทดลอง
4. คำนวณอัตราการตาย (%) คือ $p = 100r/n$ จากนั้นอ่านค่า empirical probit จากตาราง I
5. เขียนกราฟเส้นตรงระหว่าง empirical probit กับ x ลงใน probit paper โดยการกะประมาณด้วยสายตา จากเส้นตรงที่ได้ อ่านค่า expected probit : Y
6. เปิดหาค่า weighting coefficient : W ของแต่ละค่า Y จากตาราง II
7. จากตาราง IV อ่านค่า working probit : y ของแต่ละค่า p และ Y
8. ค่า x , n , w , y ที่ได้ คำนวณหาผลคูณค่า nw , nwx , nwy
9. คำนวณ $S_{nw} =$ ผลรวมของ nw
 $S_{nwx} =$ ผลรวมของ nwx
 $S_{nwy} =$ ผลรวมของ nwy
 $S_{nwx}^2 =$ ผลรวมของ $nwx \cdot x$
 $S_{nwy}^2 =$ ผลรวมของ $nwy \cdot y$

$$\begin{aligned}\bar{x} &= Snwx/Snw \\ \bar{y} &= Snwy/Snw \\ Sxx' &= Snwx^2 - (Snwx)^2/Snw \\ Syy &= Snwy^2 - (Snwy)^2/Snw \\ Sxy &= Snwxy - (Snwx)(Snwy)/Snw \\ b &= Sxy/Sxx\end{aligned}$$

สมการเส้นตรงถดถอยของ dosage-mortality regression line คือ

$$Y = \bar{y} + b(x - \bar{x})$$

ในการตรวจสอบสมมติฐานค่าความหมาย เพื่อจะยอมรับหรือปฏิเสธเส้นตรงนี้ ใช้
ไคสแควร์ (Chi-Square) โดยคำนวณง่าย ๆ จาก

$$X^2_{(k-2)} = Syy - (Sxy)^2/Sxx$$

จากนั้น นำค่า X^2 ที่คำนวณได้ไปเปรียบเทียบกับค่า X^2 ที่ได้จากตาราง VI โดยมีชั้นแห่ง
ความอิสระ (degree of freedom) = $k-2$ เมื่อ k เป็นจำนวนความเข้มข้นของโดสเมโรเอท
ที่ทดลอง

หากค่า X^2 ที่คำนวณได้น้อยกว่าในตาราง ให้ยอมรับสมมติฐาน

หากค่า X^2 ที่คำนวณได้มากกว่าในตาราง ให้ปฏิเสธสมมติฐาน

จากนั้นคำนวณค่าของ

$$\begin{aligned}Snw &= 105.6 \\ Snwx &= -97.08 \\ Snwy &= 541.06 \\ Snwx^2 &= 94.38 \\ Snwy^2 &= 2953.82 \\ Snwxy &= -469.79 \\ \bar{x} &= -0.92 \\ \bar{y} &= 5.12 \\ Sxx &= 5.14\end{aligned}$$

ตารางที่ 7 ตัวอย่างการทำ probit analysis ของแมลงหางดีด วงศ์ Neanuridae

λ	x	n	r	p	Empirical probit	Y	nw	y	nwx	nwy
0.35	-0.46	30	30	100	∞	6.15	10.8	6.79	-4.97	73.33
0.30	-0.52	30	27	90	6.28	5.95	12.6	6.21	-6.55	78.24
0.20	-0.70	30	21	70	5.53	5.53	16.2	5.52	-11.34	89.42
0.15	-0.82	30	17	54	5.10	5.20	18.0	5.10	-18.82	91.80
0.10	-1.00	30	12	38	4.69	4.78	17.4	4.70	-17.40	81.78
0.075	-1.12	30	9	27	4.39	4.45	15.9	4.39	-18.81	69.80
0.025	-1.60	30	3	10	3.72	3.27	3.6	2.89	-5.76	10.40
0.000	-	30	1	0	-	-	-	-	-	-

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$$S_{xy} = 27.61$$

$$S_{yy} = 87.21$$

$$b = 5.34$$

$$\text{สมการเส้นตรงถดถอย } Y = 5.12 + 5.34x$$

ทดสอบสมมติฐานด้วยไคส์แควร์ คำนวณค่า X^2 ได้

$$X^2(7) = -61.09$$

เมื่อเปรียบเทียบกับค่าในตาราง VI แล้ว ที่ระดับความเชื่อมั่น 95% ได้ค่าน้อยกว่า สรุปได้ว่า ยอมรับสมการเส้นตรงนี้

2. Analysis of variance (เจริญ, 2523)

การวิเคราะห์ค่าความแปรปรวนนี้ เป็นการวิเคราะห์เปรียบเทียบข้อมูลแบบ randomised block design ทดสอบโดยใช้ F Test

สูตรการวิเคราะห์หาค่าความแปรปรวน

$$\text{Correction term (CT)} = X^2/rt = (\sum_{ij} X_{ij})^2/rt$$

$$\text{Total Sum of Square (SS)} = \sum_{ij} X^2_{ij} - CT \dots\dots\dots 1$$

$$\text{Treatment Sum of Square (SS)} = \sum_i (X^2_i)/r - CT \dots\dots\dots 2$$

$$\text{Block Sum of Square (SS)} = \sum_j (9X^2_j)/t - CT \dots\dots\dots 3$$

$$\text{Error Sum of Square (SS)} = (1) - (2) - (3)$$

$$\text{Treatment Mean Square (MS)} = \frac{\text{Treatment SS}}{\text{df } (t-1)}$$

$$\text{Block Mean Square (MS)} = \frac{\text{Block SS}}{\text{df } (n-1)}$$

$$\text{Error Mean Square (MS)} = \frac{\text{Error SS}}{\text{df } (t-1)(n-1)}$$

$$F_{\text{treatment}} = \frac{\text{Treatment MS}}{\text{Error MS}}$$

$$F_{\text{Block}} = \frac{\text{Block MS}}{\text{Error MS}}$$

เมื่อ n = จำนวนข้อมูล
 X_i = ผลรวมของ treatment ที่ i
 X_{ij} = ค่าสังเกตที่ j ใน Treatment ที่ i
 i = 1, 2, ..., t
 j = 1, 2, ..., n
 t = จำนวน Treatment
 r = จำนวน Block

ตัวอย่าง การทดสอบความแตกต่างของปริมาณโตเมโรเอทตกค้างในดินในแปลงควบคุม และแปลงทดลอง ในช่วงฤดูฝน ฤดูหนาว และฤดูร้อน

Block	Treatment		Treatment Total
	แปลงควบคุม	แปลงทดลอง	
ฤดูฝน	5.83	19.95	25.78
ฤดูหนาว	26.25	71.30	97.55
ฤดูร้อน	43.75	80.05	123.80
Block Total	75.83	171.30	247.13

$$\text{Correction Term} = \frac{(247.13)^2}{3 \times 2} = 10178.87$$

$$\begin{aligned} \text{Total Sum of Square} &= (5.83^2 + \dots + 80.05^2) - 10178.87 \\ &= 4347.94 \end{aligned}$$

$$\begin{aligned} \text{Treatment Sum of Square} &= \frac{75.83^2 + 171.3^2}{3} - 10178.87 \\ &= 1519.09 \end{aligned}$$

$$\begin{aligned} \text{Block Sum of Square} &= \frac{25.78^2 + \dots + 123.8^2}{2} - 10178.87 \\ &= 2574.66 \end{aligned}$$

$$\begin{aligned}\text{Sum Square Error} &= \text{SS. Total} - \text{SS. Treatment} - \text{SS. Block} \\ &= 281.19\end{aligned}$$

Source	df	SS	MS	F	F ตาราง
Treatment	1	1519.09	1519.090	10.80	2.57
Block	2	2574.60	1287.33	9.15	3.00
Error	2	281.19	140.595		
Total	5	4347.94			

3. F-Test

เป็นการทดสอบความแตกต่างของข้อมูล 2 ชนิด

สูตร

$$F = \frac{\frac{s_1^2}{(n_1-1)}}{\frac{s_2^2}{(n_2-1)}}$$

$$s = \frac{(\sum x - \bar{x})^2}{(n-1)}$$

\bar{x} = ตัวกลาง (mean)

n = จำนวนข้อมูลทั้งหมด

ใช้ทดสอบความแตกต่างของค่า LC_{50} ของแมลงหางดีด 2 ชนิด

ในที่นี้ \bar{x} = ค่า LC_{50} ของโตเมโรเอทที่ 24 ซม. ของแมลงหางดีด

n = จำนวนความเข้มข้นของโตเมโรเอทที่ใช้

$$F = \frac{\frac{0.4540}{8}}{\frac{0.0225}{5}} = \frac{0.0560}{0.0045} = 12.44$$

F จากตารางที่ระดับความมีนัยสำคัญ $0.01 = 10.25$

เพราะฉะนั้น ค่า LC_{50} ของโตเมโรเอทที่ 24 ชม. ของแมลงหางดีด 2 ชนิด มีความแตกต่างกันอย่างมีนัยสำคัญทางสถิติ



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TABLE II. The Weighting Coefficient and Q/Z

Y	Q/Z	Percentage natural mortality, O												
		0	1	2	3	4	5	6	7	8	9	10		
1-1	5034	·00082	—	—	—	—	—	—	—	—	—	—	—	—
1-2	3426	·00118	·00001	—	—	—	—	—	—	—	—	—	—	—
1-3	2364	·00167	·00002	·00001	·00001	—	—	—	—	—	—	—	—	—
1-4	1634	·00235	·00004	·00002	·00001	·00001	·00001	·00001	·00001	—	—	—	—	—
1-5	1146	·00327	·00007	·00004	·00002	·00002	·00001	·00001	·00001	·00001	·00001	·00001	·00001	·00001
1-6	811·2	·00451	·00015	·00007	·00005	·00004	·00003	·00002	·00002	·00002	·00002	·00002	·00002	·00001
1-7	580·2	·00614	·00028	·00014	·00009	·00007	·00006	·00005	·00004	·00004	·00003	·00003	·00003	·00003
1-8	419·1	·00828	·00053	·00027	·00018	·00013	·00011	·00009	·00007	·00006	·00006	·00006	·00006	·00006
1-9	305·8	·01105	·00097	·00050	·00034	·00025	·00020	·00017	·00014	·00012	·00011	·00011	·00010	·00010
2-0	225·3	·01457	·00172	·00090	·00061	·00046	·00036	·00030	·00026	·00022	·00020	·00020	·00017	·00017
2-1	167·69	·01903	·00297	·00159	·00108	·00082	·00065	·00054	·00046	·00040	·00035	·00031	·00031	·00031
2-2	126·02	·02468	·00496	·00274	·00188	·00142	·00114	·00095	·00081	·00070	·00062	·00056	·00056	·00056
2-3	95·83	·03143	·00803	·00458	·00317	·00241	·00194	·00162	·00138	·00121	·00110	·00106	·00095	·00095
2-4	73·28	·03977	·01256	·00739	·00521	·00400	·00324	·00271	·00232	·00202	·00179	·00179	·00160	·00160
2-5	56·70	·04979	·01895	·01161	·00832	·00646	·00525	·00441	·00379	·00332	·00294	·00284	·00264	·00264
2-6	44·288	·06188	·02763	·01768	·01292	·01014	·00831	·00702	·00608	·00531	·00472	·00424	·00424	·00424
2-7	34·923	·07684	·03895	·02605	·01947	·01548	·01280	·01088	·00943	·00830	·00740	·00688	·00688	·00688
2-8	27·797	·09179	·05316	·03719	·02847	·02297	·01918	·01642	·01431	·01265	·01131	·01061	·01061	·01061
2-9	22·330	·11026	·07044	·05147	·04037	·03309	·02794	·02411	·02115	·01879	·01687	·01627	·01627	·01627
3-0	18·101	·13112	·09080	·06912	·05567	·04631	·03957	·03445	·03043	·02719	·02452	·02228	·02228	·02228
3-1	14·802	·15436	·11419	·09023	·07432	·06298	·05449	·04790	·04263	·03832	·03473	·03170	·03170	·03170
3-2	12·211	·17994	·14046	·11476	·09670	·08332	·07300	·06481	·05814	·05261	·04795	·04397	·04397	·04397
3-3	10·159	·20774	·16935	·14249	·12263	·10736	·09525	·08541	·07726	·07039	·06453	·05947	·05947	·05947
3-4	8·621	·23763	·20056	·17308	·15184	·13494	·12118	·10973	·10008	·09182	·08469	·07846	·07846	·07846
3-5	7·205	·26907	·23373	·20611	·18392	·16571	·15050	·13760	·12652	·11690	·10848	·10103	·10103	·10103
3-6	6·1394	·30199	·26842	·24107	·21836	·19921	·18283	·16867	·15631	·14541	·13575	·12711	·12711	·12711
3-7	5·2705	·33589	·30415	·27741	·25456	·23482	·21759	·20242	·18896	·17694	·16614	·15639	·15639	·15639
3-8	4·5571	·37031	·34043	·31453	·29186	·27187	·25409	·23819	·22387	·21092	·19915	·18840	·18840	·18840
3-9	3·9676	·40474	·37669	·35181	·32960	·30964	·29161	·27524	·26031	·24665	·23409	·22260	·22260	·22260
4-0	3·4770	·43863	·41237	·38864	·36707	·34739	·32937	·31279	·29749	·28334	·27020	·25797	·25797	·25797
4-1	3·0665	·47144	·44691	·42438	·40362	·38441	·36661	·35005	·33460	·32017	·30666	·29397	·29397	·29397
4-2	2·7206	·50260	·47973	·45844	·43858	·42000	·40259	·38623	·37085	·35634	·34264	·32969	·32969	·32969
4-3	2·4276	·53159	·51029	·49024	·47134	·45350	·43662	·42063	·40546	·39105	·37735	·36430	·36430	·36430
4-4	2·1780	·55788	·53806	·51924	·50134	·48430	·46805	·45255	·43774	·42357	·41002	·39702	·39702	·39702
4-5	1·9640	·58099	·56257	·54495	·52806	·51187	·49633	·48140	·46705	·45325	·43998	·42716	·42716	·42716
4-6	1·7797	·60052	·58341	·56694	·55106	·53574	·52095	·50666	·49286	·47951	·46659	·45409	·45409	·45409
4-7	1·6202	·61609	·60022	·58485	·56996	·55551	·54150	·52790	·51470	·50187	·48941	·47729	·47729	·47729
4-8	1·4814	·62742	·61271	·59840	·58446	·57089	·55766	·54478	·53221	·51996	·50801	·49635	·49635	·49635
4-9	1·3599	·63431	·62069	·60737	·59436	·58164	·56921	·55704	·54514	·53350	·52210	·51094	·51094	·51094
5-0	1·2533	·63862	·62401	·61165	·59953	·58765	·57599	·56455	·55332	·54230	·53149	·52087	·52087	·52087
5-1	1·1593	·63431	·62266	·61120	·59994	·58886	·57796	·56724	·55669	·54631	·53609	·52604	·52604	·52604
5-2	1·0769	·62742	·61667	·60607	·59562	·58532	·57516	·56515	·55527	·54553	·53592	·52644	·52644	·52644
5-3	1·0018	·61609	·60618	·59639	·58672	·57717	·56773	·55841	·54919	·54008	·53108	·52219	·52219	·52219
5-4	0·9357	·60052	·59140	·58238	·57346	·56462	·55588	·54722	·53866	·53018	·52178	·51347	·51347	·51347
5-5	0·8764	·58099	·57263	·56434	·55612	·54797	·53990	·53189	·52396	·51609	·50829	·50056	·50056	·50056
5-6	0·8230	·55788	·55022	·54262	·53507	·52759	·52015	·51278	·50545	·49818	·49097	·48380	·48380	·48380
5-7	0·7749	·53159	·52460	·51765	·51076	·50389	·49708	·49030	·48357	·47688	·47024	·46363	·46363	·46363
5-8	0·7313	·50260	·49624	·48992	·48363	·47737	·47114	·46495	·45879	·45266	·44657	·44050	·44050	·44050
5-9	0·6917	·47144	·46667	·46093	·45522	·44953	·44387	·43823	·43261	·42700	·42140	·41583	·41583	·41583
6-0	0·6557	·43863	·43343	·42824	·42308	·41793	·41281	·40770	·40261	·39754	·39249	·38746	·38746	·38746
6-1	0·6227	·40474	·40006	·39540	·39075	·38612	·38150	·37690	·37231	·36774	·36318	·35863	·35863	·35863
6-2	0·5926	·37031	·36613	·36196	·35781	·35366	·34952	·34540	·34128	·33718	·33308	·32900	·32900	·32900
6-3	0·5649	·33589	·33218	·32847	·32477	·32108	·31740	·31372	·31006	·30640	·30274	·29910	·29910	·29910
6-4	0·5394	·30199	·29871	·29543	·29216	·28890	·28564	·28238	·27913	·27589	·27266	·26942	·26942	·26942
6-5	0·5158	·26907	·26619	·26331	·26044	·25757	·25470	·25184	·24899	·24613	·24329	·24044	·24044	·24044
6-6	0·4940	·23763	·23502	·23251	·23001	·22751	·22501	·22251	·22001	·21752	·21503	·21255	·21255	·21255
6-7	0·4739	·20774	·20556	·20339	·20122	·19905	·19689	·19473	·19256	·19041	·18825	·18609	·18609	·18609
6-8	0·4551	·17994	·17808	·17621	·17435	·17249	·17063	·16877	·16691	·16506	·16320	·16135	·16135	·16135
6-9	0·4376	·15436	·15277	·15118	·14960	·14801	·14643	·14484	·14326	·14168	·14010	·13852	·13852	·13852
7-0	0·4214	·13112	·12977	·12843	·12709	·12575	·12442	·12308	·12174	·12040	·11907	·11773	·11773	·11773
7-1	0·4062	·11026	·10914	·10802	·10689	·10577	·10465	·10353	·10241	·10129	·10017	·9905	·9905	·9905
7-2	0·3919	·09179	·09086	·08993	·08900	·08807	·08714	·08621	·08528	·08435	·08342	·08249	·08249	·08249
7-3	0·3786	·07664	·07487	·07311	·07134	·06958	·06781	·06605	·06428	·06251	·06074	·05898	·05898	·05898
7-4	0·3661	·06168	·06105	·06042	·05979	·05916	·05853	·05790	·05727	·05664	·05601	·05538	·05538	·05538
7-5	0·3543	·04979	·04929	·04879	·04828	·04778	·04728	·04678	·04628	·04578	·04528	·04478	·04478	·04478
7-6	0·3432	·03977	·03937	·03897	·03857	·03817	·03777	·03737	·03697	·03657	·03617	·03577	·03577	·03577
7-7	0·3327	·03143	·03112	·03080	·03048	·03016	·02984	·02952	·02920	·02888	·02856	·02824	·02824	·02824
7-8	0·3228	·02468	·02434	·02409	·02385	·02360	·02335	·02310	·02285	·02260	·02235	·02210	·02210	·02210
7-9	0·3134	·01903	·01883	·01864	·01845	·01826	·01807	·01788	·01769	·01750	·01731	·01712	·01712	·01712
8-0	0·3046	·01457	·01442	·01428	·01413	·01399	·01384	·01369	·01355	·01340	·01325	·01311	·01311	·01311
8-1	0·2962	·01104	·01093	·01082	·01071	·01060	·01049	·01038	·01027	·01016	·01005	·00993	·00993	·00993
8-2	0·2882	·00828	·00819	·00811	·00803	·00795	·00786	·00778	·00770	·00762	·00753	·00745	·00745	·00745
8-3	0·2806	·00614	·00608	·00602	·00596	·00590	·00583	·00577	·00571	·00565	·00559	·00553	·00553	·00553
8-4	0·2734	·00451	·00446	·00442	·00437	·00433	·00428	·00424	·00420	·00415	·00410	·00406		

TABLE II (cont.)

Percentage natural mortality, C

Y	Q/E	11	12	13	14	15	16	17	18	19	20
1-1	5034	—	—	—	—	—	—	—	—	—	—
1-2	3425	—	—	—	—	—	—	—	—	—	—
1-3	2354	—	—	—	—	—	—	—	—	—	—
1-4	1634	—	—	—	—	—	—	—	—	—	—
1-5	1146	-00001	-00001	-00001	—	—	—	—	—	—	—
1-6	811.2	-00001	-00001	-00001	-00001	-00001	-00001	-00001	-00001	-00001	-00001
1-7	680.2	-00002	-00002	-00002	-00002	-00002	-00002	-00001	-00001	-00001	-00001
1-8	419.1	-00005	-00004	-00004	-00003	-00003	-00003	-00003	-00003	-00002	-00002
1-9	305.8	-00009	-00008	-00007	-00007	-00006	-00006	-00005	-00005	-00005	-00004
2-0	225.3	-00016	-00014	-00013	-00012	-00011	-00010	-00010	-00009	-00008	-00008
2-1	167.89	-00028	-00026	-00023	-00022	-00020	-00018	-00017	-00016	-00015	-00014
2-2	126.02	-00050	-00045	-00041	-00038	-00035	-00033	-00030	-00028	-00026	-00025
2-3	95.63	-00086	-00078	-00071	-00066	-00061	-00056	-00052	-00049	-00046	-00043
2-4	73.28	-00145	-00131	-00120	-00111	-00102	-00095	-00088	-00083	-00077	-00075
2-5	56.70	-00238	-00217	-00199	-00183	-00169	-00157	-00147	-00137	-00128	-00121
2-6	44.288	-00384	-00350	-00321	-00296	-00274	-00255	-00237	-00222	-00208	-00196
2-7	34.823	-00604	-00551	-00506	-00467	-00433	-00403	-00376	-00352	-00331	-00311
2-8	27.797	-00928	-00849	-00781	-00722	-00670	-00624	-00583	-00547	-00514	-00484
2-9	22.330	-01392	-01277	-01177	-01090	-01014	-00945	-00885	-00830	-00780	-00736
3-0	18.101	-02038	-01875	-01732	-01608	-01497	-01399	-01311	-01231	-01159	-01094
3-1	14.802	-02910	-02685	-02488	-02315	-02160	-02022	-01898	-01786	-01684	-01590
3-2	12.211	-04053	-03763	-03488	-03254	-03044	-02856	-02686	-02531	-02390	-02261
3-3	10.169	-05505	-05117	-04772	-04465	-04188	-03930	-03712	-03506	-03317	-03143
3-4	8.521	-07297	-06809	-06374	-05982	-05628	-05307	-05014	-04745	-04498	-04271
3-5	7.205	-09441	-08848	-08313	-07829	-07389	-06987	-06618	-06278	-05965	-05674
3-6	6.1394	-11934	-11232	-10595	-10014	-9481	-8991	-8540	-8122	-7734	-7375
3-7	5.2705	-14753	-13945	-13205	-12525	-11898	-11318	-10780	-10279	-9812	-9376
3-8	4.5571	-17854	-16947	-16111	-15336	-14616	-13946	-13321	-12738	-12187	-11672
3-9	3.9876	-21179	-20185	-19260	-18398	-17691	-16836	-16127	-15460	-14831	-14237
4-0	3.4770	-24656	-23589	-22589	-21649	-20766	-19933	-19146	-18402	-17698	-17025
4-1	3.0665	-28204	-27081	-26020	-25017	-24068	-23168	-22314	-21501	-20728	-19991
4-2	2.7206	-31742	-30578	-29473	-28421	-27420	-26465	-25554	-24684	-23852	-23055
4-3	2.4276	-35186	-33968	-32864	-31779	-30740	-29744	-28789	-27873	-26992	-26146
4-4	2.1780	-38457	-37261	-36112	-35008	-33945	-32922	-31937	-30986	-30069	-29184
4-5	1.9640	-41482	-40292	-39142	-38033	-36960	-35922	-34919	-33947	-33006	-32094
4-6	1.7797	-44198	-43025	-41887	-40784	-39713	-38674	-37664	-36683	-35729	-34801
4-7	1.6202	-46551	-45405	-44289	-43202	-42144	-41113	-40109	-39129	-38174	-37245
4-8	1.4814	-48496	-47385	-46299	-45239	-44202	-43190	-42199	-41231	-40284	-39357
4-9	1.3599	-50001	-48931	-47883	-46855	-45849	-44862	-43894	-42945	-42015	-41105
5-0	1.2533	-51044	-50020	-49014	-48026	-47054	-46100	-45162	-44240	-43333	-42441
5-1	1.1593	-51614	-50639	-49680	-48735	-47804	-46887	-45984	-45094	-44217	-43354
5-2	1.0759	-51709	-50787	-49876	-48978	-48091	-47216	-46353	-45500	-44658	-43827
5-3	1.0018	-51340	-50471	-49612	-48762	-47923	-47092	-46271	-45459	-44657	-43863
5-4	0.9357	-50524	-49709	-48903	-48104	-47313	-46529	-45754	-44985	-44224	-43470
5-5	0.8764	-49289	-48529	-47775	-47028	-46288	-45561	-44822	-44099	-43382	-42671
5-6	0.8230	-47659	-46963	-46262	-45567	-44876	-44190	-43509	-42832	-42161	-41494
5-7	0.7749	-45706	-45054	-44406	-43761	-43120	-42484	-41851	-41222	-40597	-39976
5-8	0.7313	-43447	-42847	-42250	-41666	-41096	-40478	-39893	-39311	-38733	-38157
5-9	0.6917	-40942	-40393	-39846	-39302	-38761	-38221	-37684	-37149	-36617	-36087
6-0	0.6557	-38245	-37745	-37248	-36752	-36258	-35766	-35275	-34787	-34300	-33816
6-1	0.6227	-35410	-34958	-34508	-34059	-33611	-33165	-32720	-32276	-31834	-31393
6-2	0.5926	-32493	-32087	-31681	-31277	-30874	-30472	-30071	-29671	-29272	-28874
6-3	0.5640	-29546	-29183	-28821	-28460	-28099	-27739	-27380	-27022	-26664	-26308
6-4	0.5384	-26620	-26298	-25977	-25656	-25335	-25016	-24696	-24378	-24060	-23742
6-5	0.5158	-23760	-23476	-23193	-22910	-22628	-22346	-22064	-21783	-21502	-21222
6-6	0.4940	-21007	-20759	-20511	-20264	-20016	-19770	-19523	-19277	-19031	-18785
6-7	0.4739	-18394	-18179	-17964	-17749	-17535	-17320	-17106	-16892	-16679	-16465
6-8	0.4551	-15950	-15765	-15580	-15395	-15210	-15026	-14841	-14657	-14473	-14289
6-9	0.4376	-13694	-13536	-13378	-13220	-13063	-12905	-12748	-12591	-12433	-12276
7-0	0.4214	-11640	-11506	-11373	-11239	-11106	-10973	-10840	-10707	-10574	-10441
7-1	0.4062	-09794	-09682	-09570	-09458	-09347	-09235	-09123	-09012	-08900	-08788
7-2	0.3919	-08157	-08064	-07971	-07878	-07786	-07693	-07600	-07508	-07415	-07323
7-3	0.3788	-06724	-06647	-06571	-06495	-06419	-06342	-06266	-06190	-06114	-06038
7-4	0.3661	-05465	-05423	-05361	-05299	-05237	-05175	-05113	-05051	-04989	-04927
7-5	0.3543	-04428	-04378	-04328	-04278	-04228	-04178	-04128	-04078	-04028	-03978
7-6	0.3432	-03537	-03498	-03458	-03418	-03378	-03338	-03298	-03258	-03218	-03178
7-7	0.3327	-02796	-02765	-02733	-02702	-02670	-02639	-02608	-02576	-02544	-02512
7-8	0.3228	-02187	-02163	-02138	-02114	-02089	-02064	-02040	-02016	-01990	-01964
7-9	0.3134	-01693	-01674	-01655	-01636	-01617	-01598	-01579	-01560	-01541	-01522
8-0	0.3046	-01297	-01282	-01267	-01253	-01238	-01224	-01209	-01194	-01180	-01165
8-1	0.2962	-00982	-00971	-00960	-00949	-00938	-00927	-00916	-00905	-00894	-00883
8-2	0.2882	-00737	-00728	-00720	-00712	-00704	-00696	-00687	-00679	-00670	-00661
8-3	0.2806	-00547	-00540	-00534	-00528	-00522	-00516	-00510	-00504	-00497	-00490
8-4	0.2734	-00401	-00397	-00392	-00388	-00383	-00379	-00374	-00370	-00365	-00361
8-5	0.2666	-00291	-00288	-00285	-00282	-00278	-00275	-00272	-00269	-00265	-00261
8-6	0.2600	-00209	-00207	-00205	-00202	-00200	-00198	-00195	-00193	-00191	-00189
8-7	0.2538	-00149	-00147	-00145	-00144	-00142	-00140	-00139	-00137	-00135	-00133
8-8	0.2478	-00105	-00104	-00103	-00101	-00100	-00099	-00098	-00097	-00096	-00095
8-9	0.2421	-00073	-00072	-00071	-00071	-00070	-00069	-00068	-00067	-00067	-00066
9-0	0.2367	-00050	-00050	-00049	-00049	-00048	-00047	-00047	-00046	-00046	-00045

TABLE II (cont.)

Percentage natural mortality, C

Y	Q/Z	21	22	23	24	25	26	27	28	29	30
1-1	5034	-	-	-	-	-	-	-	-	-	-
1-2	3425	-	-	-	-	-	-	-	-	-	-
1-3	2354	-	-	-	-	-	-	-	-	-	-
1-4	1634	-	-	-	-	-	-	-	-	-	-
1-5	1146	-	-	-	-	-	-	-	-	-	-
1-6	811.2	-00001	-00001	-00001	-	-	-	-	-	-	-
1-7	580.2	-00001	-00001	-00001	-00001	-00001	-00001	-00001	-00001	-00001	-00001
1-8	419.1	-00002	-00002	-00002	-00002	-00002	-00002	-00002	-00001	-00001	-00001
1-9	305.8	-00004	-00004	-00004	-00003	-00003	-00003	-00003	-00003	-00003	-00002
2-0	225.3	-00007	-00007	-00007	-00006	-00006	-00006	-00005	-00005	-00005	-00005
2-1	167.09	-00013	-00013	-00012	-00011	-00011	-00010	-00010	-00009	-00009	-00008
2-2	126.02	-00023	-00022	-00021	-00020	-00019	-00018	-00017	-00016	-00015	-00015
2-3	95.63	-00040	-00038	-00036	-00034	-00032	-00031	-00029	-00028	-00026	-00025
2-4	73.28	-00069	-00065	-00061	-00058	-00055	-00052	-00049	-00047	-00045	-00043
2-6	56.70	-00114	-00107	-00101	-00096	-00091	-00086	-00082	-00078	-00075	-00071
2-6	44.288	-00185	-00174	-00165	-00166	-00148	-00141	-00134	-00127	-00121	-00116
2-7	34.923	-00293	-00277	-00262	-00248	-00238	-00224	-00213	-00203	-00194	-00185
2-8	27.797	-00456	-00431	-00408	-00387	-00368	-00349	-00333	-00317	-00302	-00288
2-9	22.330	-00694	-00657	-00622	-00590	-00561	-00533	-00508	-00484	-00462	-00441
3-0	18.101	-01034	-00979	-00928	-00881	-00838	-00797	-00760	-00725	-00692	-00661
3-1	14.802	-01505	-01426	-01354	-01287	-01224	-01166	-01112	-01061	-01014	-00969
3-2	12.211	-02143	-02033	-01932	-01838	-01751	-01669	-01593	-01522	-01455	-01392
3-3	10.159	-02983	-02834	-02697	-02569	-02450	-02338	-02234	-02136	-02044	-01957
3-4	8.621	-04060	-03864	-03682	-03512	-03354	-03205	-03065	-02934	-02810	-02693
3-5	7.205	-05404	-05153	-04918	-04698	-04492	-04299	-04117	-03945	-03782	-03629
3-6	6.1394	-07037	-06722	-06427	-06150	-05889	-05644	-05412	-05193	-04985	-04788
3-7	5.2705	-08966	-08582	-08221	-07881	-07559	-07255	-06967	-06695	-06435	-06189
3-8	4.5871	-11187	-10730	-10298	-09890	-09503	-09136	-08787	-08455	-08139	-07838
3-9	3.9678	-13676	-13145	-12641	-12163	-11708	-11275	-10862	-10468	-10091	-09732
4-0	3.4770	-16394	-15791	-15216	-14668	-14145	-13645	-13167	-12710	-12271	-11851
4-1	3.0665	-19288	-18616	-17974	-17360	-16771	-16207	-15665	-15145	-14645	-14164
4-2	2.7206	-22291	-21559	-20855	-20180	-19531	-18906	-18304	-17725	-17166	-16626
4-3	2.4276	-25331	-24546	-23780	-23061	-22368	-21679	-21023	-20389	-19776	-19182
4-4	2.1780	-28329	-27503	-26704	-25930	-25181	-24456	-23753	-23072	-22411	-21769
4-5	1.9640	-31210	-30352	-29520	-28712	-27927	-27165	-26424	-25703	-25002	-24319
4-6	1.7797	-33900	-33022	-32167	-31335	-30524	-29734	-28963	-28212	-27479	-26764
4-7	1.6202	-36332	-35444	-34578	-33731	-32904	-32095	-31305	-30533	-29777	-29038
4-8	1.4814	-38450	-37562	-36693	-35841	-35007	-34190	-33390	-32605	-31836	-31082
4-9	1.3599	-40206	-39327	-38464	-37617	-36785	-35968	-35166	-34378	-33604	-32843
5-0	1.2533	-41664	-40702	-39853	-39019	-38197	-37389	-36593	-35810	-35039	-34279
5-1	1.1593	-42502	-41663	-40836	-40020	-39216	-38423	-37641	-36870	-36109	-35359
5-2	1.0759	-43007	-42196	-41396	-40606	-39825	-39054	-38292	-37540	-36796	-36062
5-3	1.0018	-43077	-42300	-41532	-40772	-40020	-39276	-38540	-37812	-37091	-36378
5-4	0.9357	-42724	-41984	-41252	-40526	-39807	-39094	-38388	-37689	-36996	-36309
5-5	0.8764	-41966	-41266	-40572	-39884	-39201	-38524	-37852	-37185	-36524	-35868
5-6	0.8230	-40832	-40174	-39521	-38873	-38229	-37590	-36954	-36324	-35697	-35075
5-7	0.7749	-39357	-38743	-38133	-37526	-36923	-36323	-35727	-35134	-34545	-33959
5-8	0.7313	-37584	-37014	-36447	-35883	-35322	-34763	-34207	-33655	-33104	-32557
5-9	0.6917	-35569	-35033	-34510	-33989	-33470	-32954	-32439	-31927	-31417	-30909
6-0	0.6557	-33332	-32850	-32370	-31892	-31416	-30941	-30469	-29997	-29528	-29060
6-1	0.6227	-30954	-30516	-30079	-29643	-29209	-28776	-28344	-27914	-27485	-27057
6-2	0.5926	-28477	-28081	-27686	-27292	-26899	-26507	-26116	-25726	-25337	-24949
6-3	0.5649	-26952	-26596	-26242	-25888	-25535	-25182	-24831	-24480	-24130	-23780
6-4	0.5394	-23425	-23109	-22793	-22477	-22163	-21848	-21535	-21221	-20909	-20597
6-5	0.5158	-20942	-20662	-20383	-20104	-19825	-19547	-19270	-18992	-18715	-18439
6-6	0.4940	-18540	-18294	-18049	-17805	-17561	-17317	-17073	-16829	-16586	-16343
6-7	0.4739	-16252	-16039	-15828	-15613	-15401	-15188	-14976	-14764	-14552	-14341
6-8	0.4551	-14105	-13921	-13738	-13554	-13371	-13188	-13005	-12822	-12639	-12457
6-9	0.4376	-12119	-11962	-11805	-11649	-11492	-11336	-11179	-11023	-10866	-10710
7-0	0.4214	-10308	-10175	-10042	-9909	-9777	-9644	-9512	-9379	-9247	-9114
7-1	0.4062	-08677	-08566	-08455	-08343	-08232	-08121	-08010	-07899	-07787	-07676
7-2	0.3919	-07230	-07137	-07045	-06953	-06860	-06768	-06675	-06583	-06491	-06398
7-3	0.3786	-05962	-05886	-05809	-05733	-05657	-05581	-05505	-05429	-05353	-05277
7-4	0.3661	-04865	-04803	-04741	-04679	-04617	-04555	-04493	-04431	-04369	-04307
7-5	0.3543	-03928	-03878	-03828	-03778	-03728	-03678	-03628	-03578	-03528	-03479
7-6	0.3432	-03139	-03099	-03059	-03019	-02979	-02939	-02899	-02860	-02820	-02780
7-7	0.3327	-02461	-02450	-02418	-02387	-02355	-02324	-02292	-02261	-02229	-02198
7-8	0.3228	-01941	-01917	-01892	-01867	-01843	-01818	-01793	-01769	-01744	-01720
7-9	0.3134	-01502	-01483	-01464	-01445	-01426	-01407	-01388	-01369	-01350	-01331
8-0	0.3046	-01151	-01136	-01122	-01107	-01092	-01078	-01063	-01049	-01034	-01019
8-1	0.2962	-00872	-00861	-00850	-00839	-00828	-00817	-00806	-00795	-00784	-00773
8-2	0.2882	-00654	-00646	-00637	-00629	-00621	-00612	-00604	-00596	-00588	-00579
8-3	0.2806	-00485	-00479	-00473	-00467	-00461	-00454	-00448	-00442	-00436	-00430
8-4	0.2734	-00356	-00352	-00347	-00343	-00338	-00334	-00329	-00325	-00320	-00316
8-5	0.2666	-00259	-00255	-00252	-00249	-00246	-00242	-00239	-00236	-00232	-00229
8-6	0.2600	-00186	-00184	-00181	-00179	-00176	-00174	-00172	-00169	-00167	-00165
8-7	0.2538	-00132	-00130	-00129	-00127	-00125	-00124	-00122	-00120	-00119	-00117
8-8	0.2478	-00093	-00092	-00091	-00090	-00088	-00087	-00086	-00085	-00084	-00083
8-9	0.2421	-00065	-00064	-00063	-00062	-00062	-00061	-00060	-00059	-00058	-00057
9-0	0.2367	-00045	-00044	-00044	-00043	-00042	-00042	-00041	-00041	-00040	-00040

TABLE II (cont.)
Percentage natural mortality, C

Y	Q/Z	31	32	33	34	35	36	37	38	39	40
1-1	5034	—	—	—	—	—	—	—	—	—	—
1-2	3425	—	—	—	—	—	—	—	—	—	—
1-3	2354	—	—	—	—	—	—	—	—	—	—
1-4	1834	—	—	—	—	—	—	—	—	—	—
1-5	1146	—	—	—	—	—	—	—	—	—	—
1-6	811.2	—	—	—	—	—	—	—	—	—	—
1-7	580.2	-00001	-00001	-00001	-00001	-00001	-00001	-00001	-00001	—	—
1-8	419.1	-00001	-00001	-00001	-00001	-00001	-00001	-00001	-00001	-00001	-00001
1-9	305.8	-00002	-00002	-00002	-00002	-00002	-00002	-00002	-00002	-00002	-00002
2-0	225.3	-00004	-00004	-00004	-00004	-00004	-00003	-00003	-00003	-00003	-00003
2-1	167.69	-00008	-00008	-00007	-00007	-00007	-00006	-00006	-00006	-00006	-00005
2-2	126.02	-00014	-00013	-00013	-00012	-00012	-00011	-00011	-00010	-00010	-00009
2-3	95.63	-00024	-00023	-00022	-00021	-00020	-00019	-00018	-00018	-00017	-00016
2-4	73.28	-00041	-00039	-00037	-00036	-00034	-00033	-00031	-00030	-00029	-00028
2-5	56.70	-00068	-00065	-00062	-00059	-00057	-00054	-00052	-00050	-00048	-00046
2-6	44.288	-00111	-00106	-00101	-00097	-00092	-00089	-00085	-00081	-00078	-00075
2-7	34.923	-00176	-00169	-00161	-00154	-00148	-00142	-00138	-00130	-00125	-00120
2-8	27.797	-00276	-00283	-00282	-00281	-00281	-00281	-00281	-00281	-00281	-00281
2-9	22.330	-00422	-00403	-00386	-00370	-00354	-00339	-00325	-00312	-00300	-00288
3-0	18.101	-00632	-00605	-00579	-00555	-00532	-00510	-00489	-00469	-00451	-00433
3-1	14.802	-00927	-00888	-00850	-00815	-00782	-00750	-00720	-00691	-00664	-00637
3-2	12.211	-01333	-01276	-01223	-01173	-01126	-01080	-01037	-00996	-00957	-00920
3-3	10.169	-01875	-01797	-01724	-01654	-01588	-01525	-01465	-01408	-01354	-01302
3-4	8.521	-02582	-02478	-02378	-02284	-02194	-02109	-02027	-01949	-01875	-01804
3-5	7.205	-03483	-03345	-03214	-03089	-02970	-02856	-02748	-02645	-02546	-02451
3-6	6.1394	-04601	-04423	-04254	-04093	-03938	-03791	-03651	-03516	-03387	-03263
3-7	5.2705	-05954	-05731	-05517	-05313	-05118	-04932	-04753	-04581	-04417	-04259
3-8	4.5571	-07551	-07276	-07013	-06761	-06520	-06289	-06067	-05853	-05648	-05451
3-9	3.9676	-09387	-09057	-08741	-08437	-08145	-07865	-07595	-07335	-07085	-06844
4-0	3.4770	-11447	-11059	-10687	-10328	-09983	-09650	-09329	-09020	-08721	-08432
4-1	3.0665	-13701	-13255	-12825	-12410	-12010	-11623	-11249	-10888	-10538	-10200
4-2	2.7208	-16106	-15603	-15116	-14646	-14191	-13751	-13324	-12910	-12509	-12120
4-3	2.4276	-18608	-18051	-17512	-16989	-16481	-15989	-15511	-15048	-14595	-14166
4-4	2.1780	-21146	-20541	-19953	-19382	-18826	-18285	-17758	-17246	-16747	-16261
4-5	1.9640	-23655	-23008	-22377	-21763	-21164	-20580	-20010	-19454	-18911	-18382
4-6	1.7797	-26066	-25384	-24719	-24069	-23433	-22812	-22205	-21611	-21031	-20462
4-7	1.6202	-28316	-27607	-26914	-26236	-25572	-24921	-24283	-23659	-23046	-22446
4-8	1.4814	-30342	-29617	-28905	-28206	-27521	-26846	-26188	-25539	-24902	-24276
4-9	1.3599	-32096	-31361	-30638	-29928	-29229	-28542	-27866	-27201	-26547	-25904
5-0	1.2533	-33592	-32795	-32070	-31356	-30652	-29958	-29275	-28602	-27938	-27284
5-1	1.1593	-34619	-33889	-33168	-32457	-31756	-31063	-30380	-29705	-29039	-28381
5-2	1.0759	-35336	-34618	-33909	-33209	-32516	-31832	-31155	-30486	-29824	-29170
5-3	1.0018	-35672	-34974	-34282	-33598	-32921	-32250	-31587	-30930	-30279	-29635
5-4	0.9357	-35629	-34954	-34286	-33624	-32967	-32317	-31672	-31032	-30399	-29770
5-5	0.8764	-35217	-34571	-33930	-33294	-32663	-32037	-31416	-30799	-30187	-29580
5-6	0.8230	-34457	-33843	-33233	-32628	-32026	-31428	-30835	-30245	-29659	-29077
5-7	0.7749	-33377	-32798	-32222	-31650	-31081	-30515	-29953	-29393	-28837	-28284
5-8	0.7313	-32012	-31470	-30931	-30394	-29860	-29329	-28800	-28273	-27750	-27229
5-9	0.6917	-30403	-29899	-29398	-28898	-28401	-27906	-27413	-26921	-26432	-25945
6-0	0.6557	-28594	-28129	-27666	-27205	-26746	-26288	-25831	-25377	-24923	-24472
6-1	0.6227	-26631	-26206	-25782	-25359	-24938	-24518	-24099	-23681	-23265	-22850
6-2	0.5926	-24561	-24175	-23790	-23406	-23022	-22640	-22259	-21878	-21499	-21120
6-3	0.5649	-22431	-22083	-21738	-21390	-21044	-20699	-20354	-20010	-19667	-19325
6-4	0.5394	-20285	-19974	-19663	-19353	-19044	-18735	-18426	-18119	-17811	-17504
6-5	0.5158	-18163	-17887	-17612	-17337	-17062	-16788	-16514	-16240	-15967	-15695
6-6	0.4940	-16101	-15858	-15616	-15374	-15133	-14891	-14650	-14410	-14169	-13929
6-7	0.4739	-14129	-13918	-13707	-13496	-13286	-13075	-12865	-12655	-12445	-12236
6-8	0.4551	-12274	-12092	-11910	-11728	-11546	-11364	-11182	-11001	-10819	-10638
6-9	0.4376	-10554	-10398	-10242	-10086	-9931	-9775	-9619	-9464	-9309	-9153
7-0	0.4214	-08982	-08850	-08718	-08586	-08454	-08322	-08190	-08058	-07926	-07794
7-1	0.4062	-07565	-07454	-07343	-07232	-07122	-07011	-06900	-06789	-06679	-06568
7-2	0.3919	-06306	-06214	-06121	-06029	-05937	-05845	-05753	-05661	-05569	-05477
7-3	0.3780	-05201	-05125	-05049	-04974	-04898	-04822	-04746	-04670	-04594	-04519
7-4	0.3661	-04245	-04183	-04122	-04060	-03998	-03936	-03874	-03812	-03751	-03689
7-5	0.3543	-03429	-03379	-03329	-03279	-03229	-03179	-03129	-03079	-03030	-02980
7-6	0.3432	-02740	-02700	-02660	-02620	-02581	-02541	-02501	-02461	-02421	-02382
7-7	0.3327	-02166	-02135	-02103	-02072	-02041	-02009	-01978	-01946	-01915	-01883
7-8	0.3228	-01695	-01670	-01646	-01621	-01597	-01572	-01547	-01523	-01498	-01474
7-9	0.3134	-01312	-01293	-01274	-01255	-01236	-01217	-01198	-01179	-01160	-01141
8-0	0.3046	-01005	-00990	-00976	-00961	-00947	-00932	-00917	-00903	-00888	-00874
8-1	0.2962	-00782	-00750	-00739	-00728	-00717	-00706	-00695	-00684	-00673	-00662
8-2	0.2882	-00571	-00563	-00554	-00546	-00538	-00530	-00521	-00513	-00505	-00497
8-3	0.2806	-00424	-00418	-00411	-00405	-00399	-00393	-00387	-00381	-00375	-00368
8-4	0.2734	-00311	-00307	-00302	-00298	-00293	-00289	-00284	-00279	-00275	-00270
8-5	0.2666	-00226	-00223	-00219	-00216	-00213	-00210	-00206	-00203	-00200	-00196
8-6	0.2600	-00162	-00160	-00158	-00155	-00153	-00151	-00148	-00146	-00144	-00141
8-7	0.2538	-00115	-00114	-00112	-00110	-00109	-00107	-00105	-00104	-00102	-00100
8-8	0.2475	-00081	-00080	-00079	-00078	-00077	-00075	-00074	-00073	-00072	-00071
8-9	0.2421	-00057	-00056	-00055	-00054	-00053	-00053	-00052	-00051	-00050	-00049
9-0	0.2367	-00039	-00038	-00038	-00037	-00037	-00036	-00036	-00035	-00034	-00034

TABLE II (cont.)

Percentage natural mortality, C

Y	Q/Z	41	42	43	44	45	46	47	48	49	50
1-8	419-1	-00001	-00001	-00001	-00001	-00001	-00001	-00001	-00001	-00001	-00001
1-9	305-8	-00002	-00001	-00001	-00001	-00001	-00001	-00001	-00001	-00001	-00001
2-0	225-3	-00003	-00003	-00003	-00002	-00002	-00002	-00002	-00002	-00002	-00002
2-1	167-69	-00005	-00005	-00005	-00005	-00004	-00004	-00004	-00004	-00004	-00004
2-2	126-02	-00009	-00009	-00008	-00008	-00008	-00007	-00007	-00007	-00007	-00006
2-3	95-63	-00016	-00015	-00014	-00014	-00013	-00013	-00012	-00012	-00011	-00011
2-4	73-28	-00026	-00025	-00024	-00023	-00023	-00022	-00021	-00020	-00019	-00016
2-5	56-70	-00044	-00042	-00041	-00039	-00038	-00036	-00035	-00033	-00032	-00031
2-6	44-288	-00072	-00069	-00066	-00064	-00061	-00059	-00056	-00054	-00052	-00050
2-7	34-923	-00115	-00110	-00106	-00102	-00098	-00094	-00090	-00087	-00083	-00080
2-8	27-797	-00180	-00173	-00166	-00160	-00153	-00147	-00142	-00136	-00131	-00126
2-9	22-230	-00278	-00265	-00255	-00245	-00236	-00226	-00218	-00209	-00201	-00194
3-0	18-101	-00416	-00399	-00384	-00369	-00355	-00341	-00328	-00315	-00303	-00292
3-1	14-802	-00613	-00589	-00566	-00544	-00523	-00503	-00484	-00466	-00448	-00431
3-2	12-211	-00885	-00851	-00818	-00787	-00757	-00728	-00701	-00674	-00649	-00624
3-3	10-159	-01252	-01204	-01159	-01115	-01073	-01033	-00994	-00957	-00921	-00886
3-4	8-521	-01736	-01671	-01609	-01549	-01491	-01436	-01382	-01331	-01282	-01234
3-5	7-205	-02360	-02273	-02189	-02109	-02031	-01957	-01885	-01816	-01749	-01685
3-6	6-1394	-03144	-03030	-02920	-02815	-02713	-02615	-02521	-02429	-02342	-02257
3-7	5-2705	-04107	-03961	-03820	-03684	-03554	-03427	-03306	-03188	-03074	-02964
3-8	4-5571	-05261	-05078	-04901	-04730	-04566	-04407	-04253	-04105	-03961	-03821
3-9	3-9676	-06611	-06386	-06169	-05959	-05757	-05560	-05370	-05186	-05006	-04835
4-0	3-4770	-08153	-07883	-07622	-07369	-07124	-06887	-06657	-06433	-06217	-06006
4-1	3-0665	-09872	-09554	-09248	-08948	-08658	-08376	-08103	-07838	-07579	-07328
4-2	2-7206	-11743	-11376	-11020	-10674	-10337	-10010	-09692	-09382	-09080	-08786
4-3	2-4276	-13729	-13314	-12910	-12516	-12133	-11759	-11395	-11040	-10694	-10357
4-4	2-1780	-15787	-15325	-14874	-14434	-14005	-13587	-13178	-12778	-12386	-12007
4-5	1-9640	-17864	-17359	-16865	-16382	-15910	-15448	-14997	-14555	-14122	-13699
4-6	1-7787	-19906	-19362	-18829	-18307	-17796	-17295	-16804	-16323	-15852	-15390
4-7	1-6202	-21857	-21260	-20713	-20168	-19612	-19077	-18552	-18036	-17530	-17032
4-8	1-4814	-23662	-23058	-22464	-21881	-21307	-20744	-20189	-19644	-19108	-18581
4-9	1-3599	-25270	-24647	-24033	-23428	-22833	-22247	-21670	-21102	-20542	-19990
5-0	1-2533	-26639	-26003	-25376	-24757	-24148	-23546	-22953	-22368	-21790	-21221
5-1	1-1593	-27732	-27091	-26458	-25832	-25215	-24605	-24002	-23407	-22819	-22237
5-2	1-0759	-28524	-27884	-27252	-26626	-26008	-25396	-24790	-24192	-23599	-23013
5-3	1-0018	-28998	-28366	-27741	-27122	-26509	-25901	-25300	-24704	-24114	-23530
5-4	0-9357	-29148	-28530	-27918	-27311	-26709	-26113	-25521	-24935	-24353	-23776
5-5	0-8764	-28977	-28379	-27785	-27196	-26611	-26031	-25454	-24882	-24314	-23751
5-6	0-8230	-28499	-27925	-27354	-26787	-26224	-25664	-25108	-24555	-24006	-23461
5-7	0-7749	-27734	-27187	-26644	-26103	-25565	-25030	-24499	-23970	-23444	-22921
5-8	0-7313	-26710	-26194	-25680	-25169	-24660	-24154	-23650	-23149	-22650	-22153
5-9	0-6917	-25460	-24977	-24496	-24017	-23539	-23064	-22591	-22120	-21650	-21183
6-0	0-6557	-24022	-23573	-23127	-22681	-22238	-21795	-21355	-20916	-20478	-20042
6-1	0-6227	-22436	-22023	-21611	-21201	-20792	-20384	-19977	-19572	-19167	-18764
6-2	0-6926	-20742	-20366	-19990	-19615	-19241	-18868	-18496	-18125	-17755	-17385
6-3	0-5649	-18984	-18643	-18302	-17963	-17624	-17286	-16949	-16612	-16276	-15940
6-4	0-5394	-17198	-16892	-16587	-16282	-15978	-15674	-15371	-15068	-14766	-14464
6-5	0-5156	-15422	-15150	-14878	-14608	-14337	-14066	-13796	-13527	-13257	-12989
6-6	0-4940	-13689	-13450	-13210	-12971	-12732	-12494	-12255	-12017	-11780	-11542
6-7	0-4739	-12026	-11817	-11608	-11399	-11191	-10982	-10774	-10566	-10358	-10150
6-8	0-4551	-10457	-10276	-10095	-9914	-9734	-9553	-9373	-9193	-9013	-8833
6-9	0-4378	-08998	-08843	-08688	-08533	-08378	-08224	-08069	-07914	-07760	-07606
7-0	0-4214	-07663	-07531	-07400	-07268	-07137	-07005	-06874	-06743	-06611	-06480
7-1	0-4062	-06457	-06347	-06236	-06126	-06015	-05905	-05794	-05684	-05574	-05463
7-2	0-3919	-05384	-05292	-05201	-05109	-05017	-04925	-04833	-04741	-04649	-04557
7-3	0-3786	-04443	-04367	-04291	-04215	-04140	-04064	-03988	-03913	-03837	-03761
7-4	0-3661	-03267	-03205	-03150	-03094	-03038	-02981	-02925	-02869	-02813	-02757
7-5	0-3543	-02930	-02880	-02830	-02780	-02731	-02681	-02631	-02581	-02531	-02482
7-6	0-3432	-02342	-02302	-02262	-02222	-02183	-02143	-02103	-02063	-02023	-01984
7-7	0-3327	-01852	-01820	-01789	-01757	-01726	-01695	-01663	-01632	-01600	-01569
7-8	0-3228	-01449	-01424	-01400	-01375	-01351	-01326	-01301	-01277	-01252	-01228
7-9	0-3134	-01122	-01103	-01084	-01065	-01046	-01026	-01007	-00988	-00969	-00950
8-0	0-3046	-00859	-00845	-00830	-00815	-00801	-00786	-00772	-00757	-00743	-00728
8-1	0-2962	-00651	-00640	-00629	-00618	-00607	-00596	-00585	-00574	-00563	-00552
8-2	0-2882	-00488	-00480	-00472	-00463	-00455	-00447	-00439	-00430	-00422	-00414
8-3	0-2806	-00362	-00356	-00350	-00344	-00338	-00332	-00325	-00319	-00313	-00307
8-4	0-2734	-00266	-00261	-00257	-00252	-00248	-00243	-00239	-00234	-00230	-00225
8-5	0-2666	-00193	-00190	-00187	-00183	-00180	-00177	-00174	-00170	-00167	-00164
8-6	0-2600	-00139	-00136	-00134	-00132	-00129	-00127	-00125	-00122	-00120	-00118
8-7	0-2538	-00099	-00097	-00095	-00094	-00092	-00090	-00089	-00087	-00085	-00084
8-8	0-2478	-00070	-00068	-00067	-00066	-00065	-00064	-00062	-00061	-00060	-00059
8-9	0-2421	-00046	-00048	-00047	-00046	-00045	-00044	-00044	-00043	-00042	-00041
9-0	0-2367	-00033	-00033	-00032	-00032	-00031	-00031	-00030	-00029	-00029	-00028

TABLE II (cont.)

Percentage natural mortality, C

Y	Q/Z	51	52	53	54	55	56	57	58	59	60
1-8	418-1	-00001	-00001	-00001	—	—	—	—	—	—	—
1-9	305-6	-00001	-00001	-00001	-00001	-00001	-00001	-00001	-00001	-00001	-00001
2-0	225-3	-00002	-00002	-00002	-00002	-00002	-00002	-00001	-00001	-00001	-00001
2-1	167-69	-00003	-00003	-00003	-00003	-00003	-00003	-00003	-00003	-00002	-00002
2-2	126-02	-00006	-00006	-00006	-00005	-00005	-00005	-00005	-00005	-00004	-00004
2-3	85-63	-00010	-00010	-00010	-00009	-00009	-00009	-00008	-00008	-00008	-00007
2-4	73-28	-00018	-00017	-00016	-00016	-00015	-00015	-00014	-00013	-00013	-00012
2-5	56-70	-00030	-00028	-00027	-00026	-00025	-00024	-00023	-00022	-00021	-00021
2-6	44-288	-00048	-00046	-00045	-00043	-00041	-00039	-00038	-00036	-00035	-00034
2-7	34-923	-00077	-00074	-00071	-00068	-00066	-00063	-00061	-00058	-00056	-00054
2-8	27-797	-00121	-00116	-00112	-00107	-00103	-00099	-00095	-00091	-00088	-00084
2-9	22-330	-00186	-00179	-00172	-00165	-00159	-00153	-00147	-00141	-00135	-00130
3-0	18-101	-00260	-00270	-00259	-00249	-00240	-00230	-00221	-00213	-00204	-00196
3-1	14-602	-00414	-00399	-00383	-00369	-00354	-00341	-00327	-00314	-00302	-00290
3-2	12-211	-00600	-00578	-00556	-00534	-00514	-00494	-00475	-00456	-00438	-00421
3-3	10-159	-00853	-00821	-00790	-00760	-00731	-00703	-00676	-00649	-00624	-00599
3-4	8-521	-01188	-01144	-01101	-01059	-01019	-00981	-00943	-00907	-00871	-00837
3-5	7-205	-01623	-01563	-01505	-01449	-01395	-01342	-01291	-01242	-01194	-01147
3-6	0-1394	-02174	-02095	-02018	-01944	-01872	-01802	-01734	-01668	-01605	-01543
3-7	5-2705	-02858	-02755	-02655	-02559	-02465	-02374	-02286	-02200	-02117	-02038
3-8	4-5571	-03686	-03556	-03429	-03306	-03186	-03070	-02958	-02848	-02742	-02638
3-9	3-9676	-04667	-04504	-04346	-04193	-04044	-03899	-03758	-03620	-03487	-03357
4-0	3-4770	-05802	-05603	-05410	-05222	-05040	-04862	-04689	-04520	-04356	-04196
4-1	3-0665	-07084	-06847	-06615	-06390	-06170	-05956	-05748	-05545	-05346	-05153
4-2	2-7206	-08500	-08221	-07949	-07684	-07425	-07172	-06926	-06685	-06450	-06220
4-3	2-4276	-10027	-09705	-09391	-09084	-08785	-08492	-08206	-07926	-07652	-07384
4-4	2-1780	-11634	-11270	-10914	-10565	-10224	-09890	-09563	-09244	-08930	-08623
4-5	1-9040	-13285	-12879	-12481	-12092	-11710	-11336	-10970	-10610	-10256	-09912
4-6	1-7797	-14936	-14491	-14055	-13627	-13207	-12794	-12390	-11992	-11602	-11218
4-7	1-6202	-16544	-16061	-15592	-15129	-14673	-14225	-13785	-13352	-12926	-12507
4-8	1-4814	-18062	-17551	-17049	-16554	-16067	-15588	-15116	-14652	-14194	-13744
4-9	1-3599	-19447	-18911	-18383	-17863	-17350	-16844	-16346	-15854	-15369	-14891
5-0	1-2533	-20658	-20104	-19556	-19016	-18482	-17956	-17436	-16923	-16416	-15915
5-1	1-1593	-21663	-21096	-20535	-19981	-19433	-18891	-18356	-17827	-17304	-16787
5-2	1-0759	-22434	-21860	-21292	-20730	-20175	-19624	-19080	-18541	-18007	-17479
5-3	1-0018	-22951	-22377	-21809	-21246	-20688	-20135	-19588	-19045	-18508	-17975
5-4	0-9357	-23204	-22636	-22074	-21516	-20962	-20413	-19868	-19328	-18792	-18261
5-5	0-8764	-23191	-22636	-22084	-21536	-20993	-20453	-19917	-19385	-18856	-18332
5-6	0-8230	-22919	-22380	-21845	-21313	-20785	-20259	-19737	-19218	-18703	-18191
5-7	0-7749	-22401	-21884	-21369	-20858	-20349	-19843	-19340	-18839	-18341	-17846
5-8	0-7313	-21658	-21160	-20677	-20189	-19704	-19221	-18741	-18262	-17786	-17312
5-9	0-6917	-20717	-20253	-19791	-19331	-18873	-18417	-17962	-17509	-17059	-16609
6-0	0-6557	-19607	-19174	-18742	-18312	-17884	-17456	-17030	-16606	-16183	-15762
6-1	0-6227	-18362	-17961	-17562	-17163	-16766	-16370	-15974	-15580	-15188	-14796
6-2	0-5926	-17017	-16649	-16282	-15917	-15552	-15188	-14825	-14462	-14101	-13740
6-3	0-5649	-15668	-15272	-14938	-14606	-14274	-13943	-13612	-13282	-12953	-12624
6-4	0-5394	-14163	-13862	-13562	-13262	-12963	-12663	-12366	-12069	-11771	-11475
6-5	0-5158	-12720	-12452	-12184	-11916	-11649	-11383	-11116	-10850	-10585	-10319
6-6	0-4940	-11305	-11068	-10831	-10595	-10359	-10123	-9887	-9652	-9417	-9182
6-7	0-4739	-09942	-09735	-09528	-09321	-09114	-08908	-08701	-08495	-08289	-08083
6-8	0-4551	-08653	-08473	-08294	-08114	-07935	-07756	-07577	-07398	-07219	-07040
6-9	0-4376	-07431	-07297	-07143	-06989	-06835	-06681	-06528	-06374	-06220	-06067
7-0	0-4214	-06349	-06218	-06087	-05956	-05826	-05695	-05564	-05434	-05303	-05172
7-1	0-4062	-05355	-05243	-05133	-05023	-04913	-04803	-04693	-04583	-04473	-04363
7-2	0-3919	-04466	-04374	-04282	-04190	-04099	-04007	-03916	-03824	-03732	-03641
7-3	0-3786	-03686	-03610	-03535	-03459	-03383	-03308	-03232	-03157	-03081	-03006
7-4	0-3661	-03010	-02948	-02887	-02825	-02763	-02702	-02640	-02578	-02517	-02455
7-5	0-3543	-02432	-02382	-02332	-02283	-02233	-02183	-02133	-02084	-02034	-01984
7-6	0-3432	-01944	-01904	-01864	-01825	-01785	-01745	-01705	-01666	-01626	-01586
7-7	0-3327	-01537	-01506	-01475	-01443	-01412	-01380	-01349	-01317	-01286	-01255
7-8	0-3228	-01203	-01179	-01154	-01129	-01105	-01080	-01056	-01031	-01006	-00982
7-9	0-3134	-00931	-00912	-00893	-00874	-00855	-00836	-00817	-00798	-00779	-00760
8-0	0-3046	-00713	-00699	-00684	-00670	-00655	-00641	-00626	-00611	-00597	-00582
8-1	0-2962	-00541	-00530	-00519	-00508	-00497	-00485	-00474	-00463	-00452	-00441
8-2	0-2882	-00405	-00397	-00389	-00381	-00372	-00364	-00356	-00348	-00339	-00331
8-3	0-2806	-00301	-00295	-00289	-00282	-00276	-00270	-00264	-00258	-00252	-00246
8-4	0-2734	-00221	-00216	-00212	-00207	-00203	-00198	-00194	-00189	-00185	-00180
8-5	0-2666	-00160	-00157	-00154	-00151	-00147	-00144	-00141	-00138	-00134	-00131
8-6	0-2600	-00115	-00113	-00111	-00108	-00106	-00104	-00101	-00099	-00096	-00094
8-7	0-2538	-00082	-00080	-00079	-00077	-00075	-00074	-00072	-00070	-00069	-00067
8-8	0-2478	-00058	-00057	-00055	-00054	-00053	-00052	-00051	-00050	-00048	-00047
8-9	0-2421	-00040	-00039	-00039	-00038	-00037	-00036	-00035	-00034	-00034	-00033
9-0	0-2367	-00028	-00027	-00027	-00026	-00025	-00025	-00024	-00024	-00023	-00023

TABLE II (cont.)
Percentage natural mortality, C

Y	Q/Z	61	62	63	64	65	66	67	68	69	70
1-9	305.8	-00001	-00001	-00001	-00001	-00001	-00001	-00001	-00001	-00001	-00001
2-0	225.3	-00001	-00001	-00001	-00001	-00001	-00001	-00001	-00001	-00001	-00001
2-1	167.69	-00002	-00002	-00002	-00002	-00002	-00002	-00002	-00002	-00002	-00002
2-2	126.02	-00004	-00004	-00004	-00004	-00003	-00003	-00003	-00003	-00003	-00003
2-3	95.63	-00007	-00007	-00006	-00006	-00006	-00006	-00005	-00005	-00005	-00005
2-4	73.28	-00012	-00011	-00011	-00010	-00010	-00010	-00009	-00009	-00008	-00008
2-5	56.70	-00020	-00019	-00018	-00017	-00017	-00016	-00015	-00015	-00014	-00013
2-6	44.288	-00032	-00031	-00030	-00028	-00027	-00026	-00025	-00024	-00023	-00022
2-7	34.923	-00052	-00049	-00047	-00045	-00043	-00042	-00040	-00038	-00036	-00035
2-8	27.797	-00081	-00078	-00074	-00071	-00068	-00065	-00062	-00060	-00057	-00054
2-9	22.330	-00125	-00119	-00114	-00110	-00105	-00101	-00096	-00092	-00088	-00084
3-0	18.101	-00188	-00180	-00173	-00166	-00159	-00152	-00145	-00139	-00133	-00127
3-1	14.802	-00278	-00267	-00256	-00245	-00235	-00225	-00215	-00206	-00197	-00188
3-2	12.211	-00404	-00388	-00372	-00356	-00342	-00327	-00313	-00299	-00286	-00273
3-3	10.159	-00575	-00552	-00530	-00508	-00487	-00466	-00446	-00427	-00408	-00389
3-4	8.521	-00804	-00772	-00741	-00710	-00681	-00652	-00624	-00597	-00571	-00545
3-5	7.205	-01102	-01058	-01016	-00975	-00934	-00895	-00857	-00820	-00784	-00749
3-6	6.1394	-01483	-01424	-01367	-01312	-01258	-01206	-01155	-01106	-01057	-01010
3-7	5.2705	-01958	-01881	-01807	-01735	-01664	-01595	-01529	-01463	-01400	-01338
3-8	4.5571	-02538	-02440	-02344	-02251	-02161	-02072	-01986	-01902	-01820	-01740
3-9	3.9676	-03230	-03107	-02987	-02870	-02755	-02644	-02535	-02429	-02325	-02224
4-0	3.4770	-04039	-03887	-03739	-03594	-03452	-03314	-03179	-03047	-02919	-02793
4-1	3.0665	-04964	-04779	-04599	-04423	-04251	-04083	-03919	-03758	-03601	-03447
4-2	2.7206	-05996	-05776	-05562	-05352	-05146	-04946	-04749	-04557	-04368	-04184
4-3	2.4276	-07122	-06865	-06614	-06368	-06128	-05892	-05661	-05434	-05212	-04995
4-4	2.1780	-08323	-08028	-07739	-07456	-07178	-06906	-06639	-06377	-06120	-05867
4-5	1.9640	-09572	-09240	-08913	-08592	-08277	-07968	-07664	-07366	-07073	-06785
4-6	1.7797	-10841	-10471	-10107	-09750	-09398	-09053	-08713	-08379	-08050	-07727
4-7	1.6202	-12095	-11690	-11291	-10899	-10513	-10132	-09756	-09389	-09026	-08669
4-8	1.4814	-13300	-12863	-12432	-12007	-11589	-11177	-10770	-10370	-09975	-09585
4-9	1.3599	-14420	-13954	-13496	-13043	-12596	-12155	-11720	-11291	-10867	-10449
5-0	1.2533	-15421	-14933	-14451	-13975	-13504	-13039	-12580	-12126	-11678	-11234
5-1	1.1593	-16275	-15769	-15260	-14755	-14255	-13802	-13323	-12850	-12381	-11918
5-2	1.0769	-16957	-16439	-15927	-15419	-14917	-14420	-13927	-13440	-12957	-12476
5-3	1.0018	-17447	-16923	-16405	-15891	-15381	-14876	-14375	-13879	-13387	-12899
5-4	0.9357	-17733	-17210	-16691	-16176	-15665	-15158	-14655	-14156	-13661	-13169
5-5	0.8764	-17811	-17293	-16780	-16270	-15763	-15260	-14760	-14264	-13771	-13281
5-6	0.8230	-17681	-17175	-16672	-16172	-15675	-15181	-14690	-14202	-13717	-13235
5-7	0.7749	-17353	-16863	-16376	-15891	-15409	-14929	-14452	-13977	-13505	-13035
5-8	0.7313	-16840	-16371	-15903	-15438	-14975	-14514	-14055	-13598	-13143	-12690
5-9	0.6917	-16162	-15716	-15273	-14831	-14390	-13952	-13515	-13080	-12646	-12214
6-0	0.6557	-15342	-14923	-14506	-14090	-13676	-13263	-12851	-12441	-12032	-11624
6-1	0.6227	-14405	-14016	-13628	-13240	-12854	-12469	-12085	-11702	-11321	-10940
6-2	0.5926	-13381	-13022	-12664	-12307	-11951	-11595	-11241	-10887	-10534	-10182
6-3	0.5649	-12296	-11969	-11642	-11316	-10991	-10666	-10342	-10018	-9696	-9374
6-4	0.5394	-11179	-10883	-10588	-10293	-9999	-9705	-9412	-9119	-8827	-8535
6-5	0.5158	-10055	-9790	-9526	-9262	-8999	-8736	-8473	-8211	-7948	-7687
6-6	0.4940	-08947	-08713	-08479	-08245	-08012	-07779	-07546	-07313	-07080	-06848
6-7	0.4739	-07878	-07672	-07467	-07262	-07057	-06852	-06648	-06443	-06239	-06035
6-8	0.4551	-06802	-06603	-06405	-06207	-06010	-05814	-05619	-05424	-05230	-05037
6-9	0.4378	-05813	-05626	-05440	-05254	-05069	-04884	-04699	-04514	-04329	-04144
7-0	0.4214	-05042	-04912	-04781	-04651	-04521	-04390	-04260	-04130	-04000	-03870
7-1	0.4062	-04253	-04143	-04033	-03924	-03814	-03704	-03595	-03485	-03376	-03266
7-2	0.3919	-03549	-03458	-03366	-03275	-03183	-03092	-03001	-02909	-02818	-02727
7-3	0.3786	-02930	-02855	-02780	-02704	-02629	-02553	-02478	-02403	-02327	-02252
7-4	0.3661	-02394	-02332	-02271	-02209	-02147	-02086	-02024	-01963	-01901	-01840
7-5	0.3543	-01834	-01885	-01835	-01785	-01736	-01686	-01636	-01586	-01537	-01487
7-6	0.3432	-01547	-01507	-01467	-01427	-01388	-01348	-01308	-01269	-01229	-01189
7-7	0.3327	-01223	-01192	-01160	-01129	-01098	-01066	-01035	-01003	-00972	-00941
7-8	0.3228	-00957	-00933	-00908	-00884	-00859	-00834	-00808	-00783	-00757	-00732
7-9	0.3134	-00741	-00722	-00703	-00684	-00665	-00646	-00627	-00608	-00589	-00570
8-0	0.3046	-00568	-00553	-00539	-00524	-00509	-00495	-00480	-00466	-00451	-00437
8-1	0.2962	-00430	-00419	-00408	-00397	-00386	-00375	-00364	-00353	-00342	-00331
8-2	0.2882	-00323	-00314	-00306	-00298	-00290	-00281	-00273	-00265	-00256	-00248
8-3	0.2806	-00239	-00233	-00227	-00221	-00215	-00209	-00203	-00196	-00190	-00184
8-4	0.2734	-00176	-00171	-00167	-00162	-00158	-00153	-00149	-00144	-00140	-00135
8-5	0.2666	-00128	-00124	-00121	-00118	-00115	-00111	-00108	-00105	-00102	-00098
8-6	0.2600	-00092	-00089	-00087	-00085	-00082	-00080	-00078	-00075	-00073	-00071
8-7	0.2538	-00065	-00064	-00062	-00060	-00059	-00057	-00055	-00054	-00052	-00050
8-8	0.2478	-00046	-00045	-00044	-00042	-00041	-00040	-00039	-00038	-00037	-00035
8-9	0.2421	-00032	-00031	-00030	-00030	-00029	-00028	-00027	-00026	-00025	-00025
9-0	0.2367	-00022	-00021	-00021	-00020	-00020	-00019	-00019	-00018	-00018	-00017

TABLE II (cont.)
Percentage natural mortality, C

Y	Q/Z	71	72	73	74	75	76	77	78	79	80
2-0	225-3	-00001	-00001	-00001	-00001	-00001	-00001	-00001	-00001	-00001	-
2-1	167-69	-00001	-00001	-00001	-00001	-00001	-00001	-00001	-00001	-00001	-00001
2-2	126-02	-00003	-00002	-00002	-00002	-00002	-00002	-00002	-00002	-00002	-00002
2-3	95-63	-00004	-00004	-00004	-00004	-00004	-00003	-00003	-00003	-00003	-00003
2-4	73-28	-00008	-00007	-00007	-00007	-00006	-00006	-00006	-00005	-00005	-00005
2-5	56-70	-00013	-00012	-00011	-00011	-00010	-00010	-00009	-00009	-00008	-00008
2-6	44-288	-00021	-00020	-00019	-00018	-00017	-00016	-00015	-00014	-00013	-00013
2-7	34-923	-00033	-00031	-00030	-00028	-00027	-00026	-00024	-00023	-00022	-00020
2-8	27-797	-00052	-00049	-00047	-00045	-00042	-00040	-00038	-00036	-00034	-00032
2-9	22-330	-00080	-00076	-00072	-00069	-00065	-00062	-00059	-00055	-00052	-00049
3-0	18-101	-00121	-00115	-00109	-00104	-00099	-00094	-00088	-00084	-00079	-00074
3-1	14-802	-00179	-00170	-00162	-00154	-00146	-00139	-00131	-00124	-00117	-00110
3-2	12-211	-00260	-00248	-00236	-00224	-00213	-00202	-00191	-00181	-00170	-00160
3-3	10-159	-00371	-00354	-00337	-00320	-00304	-00288	-00273	-00258	-00243	-00229
3-4	8-521	-00520	-00496	-00472	-00449	-00426	-00404	-00383	-00362	-00341	-00321
3-5	7-205	-00715	-00681	-00649	-00617	-00586	-00556	-00526	-00498	-00469	-00442
3-6	6-1394	-00964	-00920	-00876	-00833	-00792	-00751	-00711	-00673	-00635	-00598
3-7	5-2705	-01278	-01219	-01161	-01105	-01050	-00996	-00944	-00893	-00843	-00794
3-8	4-5571	-01662	-01586	-01512	-01439	-01368	-01298	-01231	-01164	-01099	-01035
3-9	3-9676	-02125	-02028	-01934	-01841	-01751	-01663	-01576	-01492	-01409	-01328
4-0	3-4770	-02669	-02549	-02431	-02316	-02203	-02093	-01985	-01879	-01775	-01673
4-1	3-0665	-03296	-03149	-03005	-02864	-02725	-02590	-02457	-02327	-02199	-02074
4-2	2-7206	-04003	-03826	-03652	-03482	-03315	-03152	-02991	-02834	-02680	-02528
4-3	2-4276	-04781	-04572	-04367	-04165	-03968	-03774	-03583	-03396	-03213	-03032
4-4	2-1780	-05620	-05377	-05138	-04903	-04673	-04446	-04224	-04006	-03791	-03580
4-5	1-9640	-06560	-06224	-05951	-05682	-05418	-05158	-04903	-04651	-04404	-04161
4-6	1-7797	-07409	-07096	-06788	-06485	-06187	-05893	-05604	-05319	-05039	-04763
4-7	1-6202	-08317	-07970	-07629	-07292	-06960	-06633	-06311	-05994	-05681	-05372
4-8	1-4814	-09201	-08822	-08449	-08081	-07717	-07359	-07005	-06656	-06311	-05971
4-9	1-3599	-10036	-09628	-09226	-08828	-08436	-08048	-07665	-07287	-06913	-06544
5-0	1-2533	-10798	-10364	-09936	-09513	-09095	-08681	-08272	-07868	-07469	-07074
5-1	1-1593	-11459	-11006	-10557	-10113	-09673	-09238	-08808	-08382	-07960	-07543
5-2	1-0759	-12005	-11535	-11071	-10610	-10154	-09702	-09255	-08811	-08372	-07937
5-3	1-0018	-12416	-11936	-11461	-10990	-10522	-10059	-09599	-09144	-08692	-08244
5-4	0-9357	-12681	-12197	-11717	-11240	-10767	-10298	-09832	-09369	-08910	-08454
5-5	0-8764	-12795	-12312	-11833	-11356	-10883	-10413	-09946	-09482	-09021	-08563
5-6	0-8230	-12756	-12279	-11806	-11335	-10867	-10402	-09939	-09479	-09022	-08567
5-7	0-7749	-12568	-12103	-11640	-11180	-10723	-10267	-09814	-09364	-08915	-08469
5-8	0-7313	-12240	-11791	-11344	-10900	-10457	-10016	-09578	-09141	-08706	-08273
5-9	0-6917	-11784	-11356	-10929	-10504	-10080	-09659	-09238	-08820	-08403	-07987
6-0	0-6557	-11218	-10813	-10410	-10008	-09607	-09208	-08809	-08412	-08017	-07623
6-1	0-6227	-10560	-10182	-09804	-09428	-09053	-08678	-08305	-07933	-07562	-07192
6-2	0-5926	-09831	-09481	-09132	-08783	-08435	-08088	-07742	-07397	-07052	-06706
6-3	0-5649	-09052	-08731	-08411	-08092	-07773	-07454	-07137	-06820	-06503	-06187
6-4	0-5394	-08244	-07953	-07662	-07372	-07083	-06794	-06506	-06218	-05930	-05643
6-5	0-5158	-07426	-07165	-06904	-06644	-06384	-06124	-05865	-05606	-05348	-05090
6-6	0-4940	-06616	-06384	-06153	-05922	-05691	-05460	-05230	-05000	-04770	-04540
6-7	0-4739	-05831	-05628	-05424	-05221	-05018	-04815	-04612	-04410	-04207	-04005
6-8	0-4551	-05084	-04907	-04730	-04553	-04376	-04200	-04023	-03847	-03671	-03495
6-9	0-4376	-04384	-04232	-04080	-03927	-03775	-03623	-03471	-03319	-03168	-03016
7-0	0-4214	-03741	-03611	-03481	-03351	-03222	-03092	-02963	-02833	-02704	-02574
7-1	0-4062	-03157	-03047	-02938	-02829	-02719	-02610	-02501	-02392	-02283	-0217.
7-2	0-3919	-02636	-02544	-02453	-02362	-02271	-02180	-02089	-01997	-01906	-01815
7-3	0-3786	-02177	-02101	-02026	-01951	-01876	-01800	-01725	-01650	-01575	-01500
7-4	0-3661	-01778	-01717	-01655	-01594	-01533	-01471	-01410	-01348	-01287	-01226
7-5	0-3543	-01437	-01388	-01338	-01289	-01239	-01189	-01140	-01090	-01040	-00991
7-6	0-3432	-01149	-01110	-01070	-01030	-00991	-00951	-00911	-00872	-00832	-00792
7-7	0-3327	-00909	-00878	-00846	-00815	-00784	-00752	-00721	-00690	-00658	-00627
7-8	0-3228	-00712	-00687	-00663	-00638	-00613	-00589	-00564	-00540	-00515	-00491
7-9	0-3134	-00551	-00532	-00513	-00494	-00475	-00456	-00437	-00418	-00399	-00380
8-0	0-3046	-00422	-00408	-00393	-00378	-00364	-00349	-00335	-00320	-00306	-00291
8-1	0-2962	-00320	-00309	-00298	-00287	-00276	-00265	-00254	-00243	-00232	-00221
8-2	0-2882	-00240	-00232	-00223	-00215	-00207	-00199	-00190	-00182	-00174	-00165
8-3	0-2806	-00178	-00172	-00166	-00160	-00153	-00147	-00141	-00135	-00129	-00123
8-4	0-2734	-00131	-00126	-00122	-00117	-00113	-00108	-00104	-00099	-00095	-00090
8-5	0-2666	-00095	-00092	-00088	-00085	-00082	-00079	-00075	-00072	-00069	-00065
8-6	0-2600	-00068	-00066	-00064	-00061	-00059	-00056	-00054	-00052	-00049	-00047
8-7	0-2538	-00048	-00047	-00045	-00043	-00042	-00040	-00038	-00037	-00035	-00033
8-8	0-2478	-00034	-00033	-00032	-00031	-00029	-00028	-00027	-00026	-00025	-00024
8-9	0-2421	-00024	-00023	-00022	-00021	-00021	-00020	-00019	-00018	-00017	-00016
9-0	0-2367	-00016	-00016	-00015	-00015	-00014	-00014	-00013	-00012	-00012	-00011

TABLE II (cont.)

Percentage natural mortality, C

Y	Q/Z	81	82	83	84	85	86	87	88	89	90
2-1	167-69	-00001	-00001	-00001	-00001	-00001	-00001	-00001	-00001	-00001	-00001
2-2	126-02	-00001	-00001	-00001	-00001	-00001	-00001	-00001	-00001	-00001	-00001
2-3	95-63	-00003	-00002	-00002	-00002	-00002	-00002	-00002	-00001	-00001	-00001
2-4	73-28	-00004	-00004	-00004	-00004	-00003	-00003	-00003	-00003	-00002	-00002
2-5	56-70	-00007	-00007	-00006	-00006	-00005	-00005	-00005	-00004	-00004	-00003
2-6	44-288	-00012	-00011	-00010	-00010	-00009	-00008	-00008	-00007	-00006	-00006
2-7	34-923	-00019	-00018	-00017	-00015	-00014	-00013	-00012	-00011	-00010	-00009
2-8	27-797	-00030	-00028	-00026	-00024	-00022	-00021	-00019	-00017	-00016	-00014
2-9	22-330	-00046	-00043	-00040	-00037	-00035	-00032	-00029	-00027	-00024	-00022
3-0	18-101	-00070	-00065	-00061	-00057	-00052	-00048	-00044	-00041	-00037	-00033
3-1	14-802	-00103	-00097	-00090	-00084	-00078	-00072	-00066	-00060	-00055	-00049
3-2	12-211	-00150	-00141	-00131	-00122	-00113	-00105	-00096	-00088	-00080	-00072
3-3	10-159	-00215	-00201	-00188	-00175	-00162	-00150	-00137	-00125	-00114	-00102
3-4	8-521	-00301	-00282	-00264	-00245	-00228	-00210	-00193	-00176	-00160	-00144
3-5	7-205	-00415	-00389	-00363	-00338	-00314	-00289	-00266	-00243	-00220	-00198
3-6	6-1394	-00581	-00526	-00491	-00457	-00424	-00392	-00360	-00329	-00298	-00269
3-7	5-2705	-00746	-00699	-00653	-00608	-00564	-00521	-00479	-00438	-00397	-00357
3-8	4-5571	-00973	-00912	-00853	-00794	-00737	-00681	-00626	-00572	-00519	-00467
3-9	3-8676	-01248	-01170	-01094	-01020	-00946	-00875	-00804	-00735	-00667	-00601
4-0	3-4770	-01574	-01476	-01380	-01287	-01195	-01104	-01016	-00929	-00844	-00760
4-1	3-0665	-01951	-01831	-01713	-01597	-01483	-01371	-01262	-01154	-01049	-00945
4-2	2-7206	-02379	-02233	-02090	-01950	-01811	-01676	-01542	-01411	-01282	-01156
4-3	2-4276	-02855	-02681	-02510	-02342	-02177	-02015	-01855	-01698	-01544	-01392
4-4	2-1760	-03372	-03168	-02967	-02770	-02575	-02384	-02196	-02011	-01829	-01650
4-5	1-9640	-03921	-03685	-03453	-03225	-03000	-02779	-02561	-02346	-02134	-01926
4-6	1-7797	-04491	-04223	-03959	-03699	-03442	-03180	-02941	-02695	-02453	-02214
4-7	1-6202	-05068	-04767	-04472	-04180	-03892	-03608	-03328	-03051	-02778	-02509
4-8	1-4814	-05636	-05305	-04978	-04655	-04337	-04022	-03711	-03404	-03101	-02802
4-9	1-3599	-06180	-05820	-05464	-05112	-04764	-04421	-04081	-03745	-03414	-03085
5-0	1-2533	-06683	-06296	-05914	-05536	-05162	-04792	-04426	-04064	-03705	-03351
5-1	1-1593	-07129	-06720	-06315	-05914	-05517	-05124	-04735	-04349	-03967	-03589
5-2	1-0759	-07505	-07078	-06654	-06235	-05819	-05407	-04998	-04593	-04192	-03794
5-3	1-0018	-07799	-07358	-06921	-06488	-06057	-05631	-05208	-04788	-04371	-03958
5-4	0-9357	-08002	-07533	-07107	-06665	-06226	-05790	-05357	-04927	-04500	-04076
5-5	0-8764	-08108	-07656	-07208	-06762	-06318	-05878	-05441	-05006	-04574	-04145
5-6	0-8230	-08116	-07666	-07219	-06775	-06334	-05895	-05458	-05024	-04592	-04163
5-7	0-7749	-08025	-07584	-07144	-06707	-06272	-05839	-05409	-04980	-04554	-04130
5-8	0-7313	-07842	-07413	-06986	-06560	-06137	-05715	-05295	-04877	-04461	-04047
5-9	0-6917	-07573	-07161	-06751	-06341	-05934	-05528	-05123	-04720	-04319	-03919
6-0	0-6557	-07230	-06838	-06448	-06058	-05671	-05284	-04899	-04514	-04132	-03750
6-1	0-6227	-06823	-06454	-06087	-05721	-05356	-04992	-04629	-04267	-03906	-03546
6-2	0-5926	-06365	-06023	-05682	-05342	-05002	-04663	-04325	-03987	-03651	-03315
6-3	0-5649	-05872	-05558	-05244	-04930	-04618	-04306	-03994	-03683	-03373	-03063
6-4	0-5394	-05357	-05071	-04785	-04500	-04215	-03931	-03647	-03364	-03081	-02799
6-5	0-5158	-04832	-04575	-04318	-04061	-03805	-03548	-03293	-03037	-02782	-02528
6-6	0-4940	-04311	-04082	-03853	-03624	-03396	-03168	-02940	-02712	-02485	-02256
6-7	0-4739	-03803	-03601	-03400	-03198	-02997	-02796	-02595	-02395	-02194	-01994
6-8	0-4551	-03319	-03143	-02967	-02792	-02616	-02441	-02266	-02091	-01916	-01741
6-9	0-4376	-02864	-02713	-02561	-02410	-02259	-02107	-01956	-01805	-01654	-01504
7-0	0-4214	-02445	-02316	-02187	-02058	-01929	-01800	-01671	-01542	-01413	-01284
7-1	0-4062	-02065	-01956	-01847	-01738	-01629	-01520	-01411	-01302	-01194	-01085
7-2	0-3919	-01724	-01633	-01542	-01451	-01361	-01270	-01179	-01088	-00997	-00906
7-3	0-3786	-01425	-01349	-01274	-01199	-01124	-01049	-00974	-00899	-00824	-00749
7-4	0-3661	-01164	-01103	-01041	-00980	-00919	-00857	-00796	-00735	-00674	-00612
7-5	0-3543	-00941	-00892	-00842	-00792	-00743	-00693	-00644	-00594	-00545	-00495
7-6	0-3432	-00753	-00713	-00673	-00634	-00594	-00555	-00515	-00475	-00436	-00396
7-7	0-3327	-00596	-00564	-00533	-00501	-00470	-00439	-00407	-00376	-00345	-00313
7-8	0-3228	-00466	-00442	-00417	-00393	-00368	-00343	-00319	-00294	-00270	-00245
7-9	0-3134	-00361	-00342	-00323	-00304	-00285	-00266	-00247	-00228	-00209	-00190
8-0	0-3046	-00277	-00262	-00247	-00233	-00218	-00204	-00189	-00174	-00160	-00146
8-1	0-2962	-00210	-00199	-00188	-00176	-00165	-00154	-00143	-00132	-00121	-00110
8-2	0-2882	-00157	-00149	-00141	-00132	-00124	-00116	-00108	-00099	-00091	-00083
8-3	0-2806	-00117	-00110	-00104	-00098	-00092	-00086	-00080	-00074	-00068	-00061
8-4	0-2734	-00086	-00081	-00077	-00072	-00068	-00063	-00059	-00054	-00050	-00045
8-5	0-2666	-00062	-00059	-00056	-00052	-00049	-00046	-00043	-00039	-00036	-00033
8-6	0-2600	-00045	-00042	-00040	-00038	-00035	-00033	-00031	-00028	-00026	-00024
8-7	0-2538	-00032	-00030	-00028	-00027	-00025	-00023	-00022	-00020	-00018	-00017
8-8	0-2478	-00022	-00021	-00020	-00019	-00018	-00017	-00015	-00014	-00013	-00012
8-9	0-2421	-00016	-00015	-00014	-00013	-00012	-00011	-00011	-00010	-00009	-00008
9-0	0-2367	-00011	-00010	-00010	-00009	-00008	-00008	-00007	-00007	-00006	-00006

TABLE IV. Working Probits

(Y = 2.0-2.9; 0-50% kill)

% kill	Expected probit, Y									
	2-0	2-1	2-2	2-3	2-4	2-5	2-6	2-7	2-8	2-9
0	1-695	1-787	1-877	1-967	2-057	2-146	2-234	2-321	2-408	2-494
1	3-951	3-467	3-141	2-927	2-793	2-716	2-681	2-674	2-690	2-721
2	6-207	5-147	4-404	3-886	3-529	3-287	3-127	3-027	-972	-949
3	8-463	6-827	5-667	4-846	4-265	-857	-574	-380	3-254	3-178
4	—	8-507	6-931	5-800	5-002	4-428	4-020	-733	-536	-403
5	—	—	8-194	6-765	-738	-998	-467	4-086	-818	-631
6	—	—	9-458	7-725	6-474	5-569	4-913	4-440	4-099	3-858
7	—	—	—	8-684	7-210	6-139	5-360	-793	-381	4-085
8	—	—	—	9-644	-946	-710	-806	5-146	-863	-313
9	—	—	—	—	8-683	7-280	6-253	-499	-945	-540
10	—	—	—	—	9-419	-851	-699	-852	5-227	-767
11	—	—	—	—	—	8-421	7-146	6-205	5-509	4-995
12	—	—	—	—	—	-992	-592	-558	-791	5-222
13	—	—	—	—	—	9-502	8-039	-911	6-073	-449
14	—	—	—	—	—	—	-486	7-264	-355	-677
15	—	—	—	—	—	—	-932	-617	-636	-904
16	—	—	—	—	—	—	9-379	7-970	6-918	6-132
17	—	—	—	—	—	—	-825	8-323	7-200	-358
18	—	—	—	—	—	—	—	-676	-482	-586
19	—	—	—	—	—	—	—	9-029	-764	-814
20	—	—	—	—	—	—	—	-382	8-046	7-041
21	—	—	—	—	—	—	—	9-735	8-328	7-288
22	—	—	—	—	—	—	—	—	-610	-496
23	—	—	—	—	—	—	—	—	-892	-723
24	—	—	—	—	—	—	—	—	9-173	-950
25	—	—	—	—	—	—	—	—	-455	8-178
26	—	—	—	—	—	—	—	9-737	8-405	—
27	—	—	—	—	—	—	—	—	-633	—
28	—	—	—	—	—	—	—	—	-860	—
29	—	—	—	—	—	—	—	—	9-087	—
30	—	—	—	—	—	—	—	—	—	315
31	—	—	—	—	—	—	—	—	—	9-542
32	—	—	—	—	—	—	—	—	—	-769
33	—	—	—	—	—	—	—	—	—	-997
34	—	—	—	—	—	—	—	—	—	—
35	—	—	—	—	—	—	—	—	—	—

TABLE IV (cont.)

(Y = 3.0-3.9; 0-50% kill)

% kill	Expected probit, Y										
	3-0	3-1	3-2	3-3	3-4	3-5	3-6	3-7	3-8	3-9	
0	2-579	2-662	2-745	2-826	2-906	2-984	3-061	3-127	3-193	3-259	3-323
1	2-764	2-815	2-872	2-932	2-996	3-061	3-127	3-193	3-259	3-323	-369
2	-949	-967	-908	3-039	3-086	-139	-194	-252	-310	-362	-415
3	3-134	3-120	3-125	-145	-176	-216	-261	-310	-362	-415	-461
4	-319	-272	-252	-251	-267	-293	-328	-369	-413	-461	-507
5	-505	-424	-378	-358	-357	-370	-395	-427	-465	-507	-553
6	3-690	3-577	3-505	3-464	3-447	3-447	3-461	3-485	3-516	3-553	-509
7	-875	-729	-632	-570	-537	-525	-528	-544	-568	-599	-645
8	4-060	-882	-758	-677	-627	-602	-595	-602	-619	-645	-690
9	-246	4-034	-885	-783	-717	-679	-663	-660	-671	-690	-736
10	-431	-186	4-012	-889	-808	-756	-728	-719	-722	-736	-782
11	4-616	4-339	4-138	3-996	3-898	3-834	3-795	3-777	3-774	3-782	-828
12	-801	-491	-265	4-102	-988	-911	-862	-835	-825	-828	-874
13	-966	-644	-391	-208	4-078	-988	-929	-894	-877	-874	-920
14	5-172	-796	-516	-315	-168	4-065	-996	-952	-928	-920	-966
15	-357	-948	-645	-421	-258	-142	4-062	4-010	-960	-966	-1012
16	5-542	5-101	4-771	4-527	4-348	4-220	4-129	4-069	4-031	4-012	-058
17	-727	-253	-898	-634	-439	-297	-196	-127	-083	-058	-104
18	-913	-406	5-025	-740	-529	-374	-263	-185	-134	-104	-149
19	6-098	-558	-151	-846	-619	-451	-330	-244	-186	-149	-195
20	-283	-710	-278	-953	-709	-528	-396	-302	-237	-195	-241
21	1-6468	5-863	5-405	5-059	4-799	4-606	4-463	4-361	4-289	4-241	-287
22	-653	6-015	-531	-165	-889	-683	-530	-419	-340	-287	-333
23	-839	-168	-858	-272	-979	-760	-597	-477	-392	-333	-379
24	7-024	-320	-785	-378	5-070	-837	-664	-536	-443	-379	-425
25	-209	-472	-911	-484	160	-914	-730	-594	-495	-425	-471
26	7-394	6-625	6-038	5-591	5-250	4-992	4-797	4-652	4-546	4-471	-517
27	-580	-777	-165	-697	-340	5-009	-864	-711	-598	-517	-563
28	-765	-930	-291	-803	-430	-146	-931	-769	-649	-563	-608
29	-950	7-082	-418	-910	-520	-223	-997	-827	-701	-608	-654
30	8-135	-234	-545	6-016	-610	-300	5-064	-886	-752	-654	-700
31	8-320	7-387	6-671	6-122	5-701	5-378	5-131	4-944	4-804	4-700	-746
32	-506	-539	-798	-229	-791	-455	-198	5-002	-855	-746	-792
33	-691	-692	-925	-335	-881	-532	-265	-061	-907	-792	-838
34	-876	-844	-7-051	-441	-971	-609	-331	-110	-958	-838	-884
35	9-061	-996	-178	-548	6-061	-687	-398	-177	5-010	-884	-930
36	9-247	8-149	7-305	6-654	6-151	5-764	5-465	5-236	5-061	4-930	-976
37	-432	-301	-431	-760	-242	-841	-532	-294	-113	-976	-1022
38	-617	-454	-558	-867	-332	-918	-599	-353	-164	-1022	-068
39	-802	-606	-685	-973	-422	-995	-685	-411	-216	-068	-113
40	-987	-758	-811	7-079	-512	6-073	-732	-469	-267	-113	-159
41	—	8-911	7-938	7-186	6-602	6-150	5-799	5-528	5-319	5-159	-205
42	—	9-063	8-065	-292	-692	-227	-866	-586	-370	-205	-251
43	—	-216	-191	-398	-782	-304	-932	-644	-422	-251	-297
44	—	-368	-318	-505	-873	-381	-999	-703	-473	-297	-343
45	—	-520	-445	-611	-963	-459	6-066	-761	-525	-343	-389
46	—	9-673	8-571	7-717	7-053	6-536	6-133	5-819	5-576	5-389	-435
47	—	-825	-698	-824	-143	-613	-200	-878	-628	-435	-481
48	—	-978	-825	-930	-233	-690	-266	-936	-679	-481	-527
49	—	—	-951	8-036	-323	-767	-333	-994	-731	-527	-572
50	—	—	9-078	-143	-414	-845	-400	6-053	-782	-572	—

TABLE IV (cont.)

(Y = 4.0-4.9; 0-50% kill)

% kill	Expected probit, Y									
	4.0	4.1	4.2	4.3	4.4	4.5	4.6	4.7	4.8	4.9
0	3.344	3.408	3.469	3.525	3.577	3.624	3.664	3.698	3.724	3.741
1	3.386	3.446	3.503	3.557	3.607	3.652	3.691	3.724	3.750	3.766
2	.427	.487	.538	.589	.637	.680	.719	.751	.775	.791
3	.468	.521	.572	.621	.667	.709	.746	.777	.801	.816
4	.510	.559	.607	.653	.697	.737	.773	.803	.826	.841
5	.551	.596	.641	.685	.727	.766	.800	.829	.852	.867
6	3.502	3.634	3.676	3.717	3.757	3.794	3.827	3.856	3.878	3.892
7	.634	.671	.710	.749	.787	.822	.854	.882	.903	.917
8	.675	.709	.745	.781	.817	.851	.882	.908	.929	.942
9	.716	.747	.779	.813	.847	.879	.909	.934	.954	.967
10	.758	.784	.814	.845	.877	.908	.936	.960	.980	.993
11	3.799	3.822	3.848	3.877	3.907	3.936	3.963	3.987	4.005	4.018
12	.810	.859	.883	.909	.937	.964	.990	4.013	.031	.043
13	.882	.897	.917	.941	.967	.993	4.017	.039	.057	.068
14	.923	.934	.952	.973	.997	4.021	.044	.065	.082	.093
15	.964	.972	.986	4.005	4.027	.050	.072	.092	.108	.119
16	4.006	4.010	4.021	4.038	4.057	4.078	4.099	4.118	4.133	4.144
17	.047	.047	.056	.070	.087	.106	.126	.144	.159	.169
18	.088	.085	.090	.102	.117	.135	.153	.170	.184	.194
19	.130	.122	.125	.134	.147	.163	.180	.196	.210	.219
20	.171	.160	.159	.166	.177	.192	.207	.223	.236	.245
21	4.212	4.198	4.194	4.198	4.207	4.220	4.235	4.249	4.261	4.270
22	.253	.235	.228	.230	.237	.248	.262	.275	.287	.295
23	.295	.273	.263	.262	.267	.277	.289	.301	.312	.320
24	.336	.310	.297	.294	.297	.305	.316	.327	.338	.345
25	.377	.348	.332	.326	.327	.334	.343	.354	.363	.370
26	4.419	4.385	4.366	4.358	4.357	4.362	4.370	4.380	4.389	4.396
27	.460	.423	.401	.390	.387	.391	.397	.406	.415	.421
28	.501	.461	.435	.422	.417	.419	.425	.432	.440	.446
29	.543	.498	.470	.454	.447	.447	.452	.459	.466	.471
30	.584	.536	.504	.486	.477	.476	.479	.485	.491	.496
31	4.625	4.573	4.539	4.518	4.507	4.504	4.506	4.511	4.517	4.522
32	.667	.611	.573	.550	.537	.533	.533	.537	.542	.547
33	.708	.649	.608	.582	.567	.561	.560	.563	.568	.572
34	.749	.686	.642	.614	.597	.580	.568	.560	.564	.567
35	.791	.724	.677	.646	.627	.618	.615	.616	.619	.622
36	4.832	4.761	4.711	4.678	4.657	4.646	4.642	4.642	4.645	4.648
37	.873	.799	.746	.710	.687	.675	.669	.668	.670	.673
38	.915	.836	.780	.742	.717	.703	.696	.695	.696	.698
39	.956	.874	.815	.774	.747	.731	.723	.721	.721	.723
40	.997	.912	.849	.806	.777	.760	.750	.747	.747	.748
41	5.039	4.949	4.884	4.838	4.807	4.788	4.778	4.773	4.773	4.774
42	.080	.087	.018	.870	.837	.817	.805	.799	.798	.799
43	.121	5.024	.953	.902	.867	.845	.832	.826	.824	.824
44	.163	.062	.988	.934	.897	.873	.859	.852	.849	.849
45	.204	.099	5.022	.966	.927	.902	.886	.878	.875	.874
46	5.245	5.137	5.057	4.998	4.957	4.930	4.913	4.904	4.900	4.900
47	.287	.175	.091	5.030	.987	.959	.941	.931	.926	.925
48	.328	.212	.126	.062	5.017	.987	.968	.957	.952	.950
49	.369	.250	.160	.094	.047	5.015	.995	.983	.977	.975
50	.411	.287	.195	.126	.078	.044	5.022	5.009	5.003	5.000

TABLE IV (cont.)

(Y = 5.0-5.9; 0-50% kill)

% kill	Expected probit, Y									
	5.0	5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8	5.9
0	3.747	3.740	3.719	3.680	3.620	3.536	3.422	3.272	3.079	2.834
1	3.772	3.765	3.744	3.706	3.647	3.564	3.452	3.304	3.114	2.871
2	.797	.790	.770	.732	.675	.593	.482	.336	.148	.909
3	.822	.816	.795	.758	.702	.621	.512	.368	.183	.946
4	.847	.841	.821	.785	.729	.650	.542	.400	.217	.984
5	.872	.866	.846	.811	.756	.678	.572	.433	.252	3.021
6	3.897	3.891	3.872	3.837	3.783	3.706	3.602	3.465	3.287	3.059
7	.922	.916	.898	.863	.810	.735	.632	.497	.321	.097
8	.947	.942	.923	.890	.838	.763	.662	.529	.356	.134
9	.972	.967	.949	.916	.865	.792	.692	.561	.390	.172
10	.997	.992	.974	.942	.892	.820	.723	.593	.425	.209
11	4.022	4.017	4.000	3.968	3.919	3.848	3.752	3.625	3.459	3.247
12	.047	.042	.025	.994	.946	.877	.782	.657	.494	.284
13	.073	.068	.051	4.021	.973	.905	.812	.689	.528	.322
14	.098	.093	.077	.047	4.000	.934	.842	.721	.563	.360
15	.123	.118	.102	.073	.028	.962	.872	.753	.597	.397
16	4.148	4.143	4.128	4.099	4.055	3.990	3.902	3.785	3.632	3.435
17	.173	.168	.153	.126	.082	4.019	.932	.817	.666	.472
18	.198	.194	.179	.152	.109	.047	.962	.849	.701	.510
19	.223	.219	.204	.178	.136	.076	.992	.881	.735	.548
20	.248	.244	.230	.204	.163	.104	4.022	.913	.770	.585
21	4.273	4.269	4.256	4.230	4.191	4.132	4.052	3.945	3.804	3.623
22	.298	.294	.281	.257	.218	.161	.082	.977	.839	.660
23	.323	.320	.307	.283	.245	.189	.112	4.009	.873	.698
24	.348	.345	.332	.309	.272	.218	.142	.041	.908	.735
25	.373	.370	.358	.335	.299	.246	.172	.073	.942	.773
26	4.398	4.395	4.383	4.362	4.326	4.275	4.202	4.105	3.977	3.811
27	.423	.420	.409	.388	.353	.303	.232	.137	4.011	.846
28	.449	.445	.435	.414	.381	.331	.262	.169	.046	.886
29	.474	.471	.460	.440	.408	.360	.292	.201	.080	.923
30	.499	.496	.486	.466	.435	.386	.322	.233	.115	.961
31	4.524	4.521	4.511	4.493	4.462	4.417	4.352	4.265	4.149	3.999
32	.549	.546	.537	.519	.489	.445	.382	.297	.184	4.036
33	.574	.571	.563	.545	.516	.473	.412	.329	.219	.074
34	.599	.597	.588	.571	.544	.502	.442	.361	.253	.111
35	.624	.622	.614	.598	.571	.530	.472	.393	.288	.149
36	4.649	4.647	4.639	4.624	4.598	4.559	4.502	4.425	4.322	4.186
37	.674	.672	.665	.650	.625	.587	.532	.457	.357	.224
38	.699	.697	.690	.676	.652	.615	.562	.489	.391	.262
39	.724	.723	.716	.702	.679	.644	.592	.521	.428	.299
40	.749	.748	.742	.729	.706	.672	.622	.553	.460	.337
41	4.774	4.773	4.767	4.755	4.734	4.701	4.652	4.585	4.495	4.374
42	.799	.798	.793	.781	.761	.729	.682	.617	.529	.412
43	.825	.823	.818	.807	.788	.757	.712	.649	.564	.450
44	.850	.849	.844	.833	.815	.786	.742	.682	.598	.487
45	.875	.874	.869	.860	.842	.814	.772	.714	.633	.525
46	4.900	4.899	4.895	4.886	4.869	4.843	4.802	4.740	4.667	4.562
47	.925	.924	.921	.912	.897	.871	.832	.778	.702	.600
48	.950	.949	.946	.938	.924	.899	.862	.810	.736	.637
49	.975	.975	.972	.965	.951	.928	.892	.842	.771	.675
50	5.000	5.000	.997	.991	.978	.956	.922	.874	.805	.713

TABLE IV (cont.)

(Y = 3-0-3-9; 51-100% kill)

% kill	Expected probit, Y									
	3-0	3-1	3-2	3-3	3-4	3-5	3-6	3-7	3-8	3-9
51	—	—	9-205	8-249	7-504	6-922	6-467	6-111	5-834	5-618
52	—	—	-331	-355	-594	-909	-534	-170	-885	-664
53	—	—	-458	-462	-684	-7076	-600	-228	-937	-710
54	—	—	-585	-568	-774	-154	-667	-286	-988	-756
55	—	—	-711	-674	-864	-231	-734	-345	6-040	-802
56	—	—	9-838	8-781	7-954	7-308	6-801	6-403	6-091	5-848
57	—	—	-965	-887	8-045	-385	-868	-461	-143	-894
58	—	—	—	-993	-135	-463	-934	-520	-194	-940
59	—	—	—	9-100	-225	-540	7-001	-578	-246	-986
60	—	—	—	-206	-315	-617	-068	-636	-297	6-031
61	—	—	—	9-312	8-405	7-694	7-135	6-695	6-349	6-077
62	—	—	—	-419	-495	-771	-201	-753	-400	-123
63	—	—	—	-525	-585	-848	-268	-811	-452	-169
64	—	—	—	-631	-676	-926	-335	-870	-503	-215
65	—	—	—	-738	-766	8-003	-402	-928	-555	-261
66	—	—	—	9-844	8-856	8-080	7-469	6-986	6-606	6-307
67	—	—	—	-950	-946	-157	-535	-7-045	-658	-353
68	—	—	—	—	9-036	-234	-802	-103	-709	-399
69	—	—	—	—	-126	-312	-669	-162	-761	-445
70	—	—	—	—	-216	-389	-736	-220	-812	-491
71	—	—	—	—	9-307	8-466	7-803	7-278	6-864	6-536
72	—	—	—	—	-397	-543	-869	-337	-915	-582
73	—	—	—	—	-487	-621	-936	-395	-967	-628
74	—	—	—	—	-577	-698	8-003	-453	-7-018	-674
75	—	—	—	—	-667	-775	-070	-512	-070	-720
76	—	—	—	—	9-757	8-852	8-136	7-570	7-121	6-766
77	—	—	—	—	-848	-929	-203	-628	-173	-812
78	—	—	—	—	-938	9-007	-270	-687	-224	-858
79	—	—	—	—	—	-084	-337	-745	-276	-904
80	—	—	—	—	—	-161	-404	-803	-327	-950
81	—	—	—	—	—	9-238	8-470	7-862	7-379	6-995
82	—	—	—	—	—	-315	-537	-920	-430	-7-041
83	—	—	—	—	—	-393	-604	-978	-482	-087
84	—	—	—	—	—	-470	-871	8-037	-533	-133
85	—	—	—	—	—	-547	-738	-095	-585	-179
86	—	—	—	—	—	9-624	8-804	8-154	7-636	7-225
87	—	—	—	—	—	-701	-871	-212	-688	-271
88	—	—	—	—	—	-779	-938	-270	-739	-317
89	—	—	—	—	—	-856	9-005	-329	-791	-363
90	—	—	—	—	—	-933	-072	-387	-842	-409
91	—	—	—	—	—	—	9-138	8-445	7-894	7-454
92	—	—	—	—	—	—	-205	-504	-945	-500
93	—	—	—	—	—	—	-272	-562	-997	-546
94	—	—	—	—	—	—	-339	-620	8-048	-592
95	—	—	—	—	—	—	-405	-679	-100	-638
96	—	—	—	—	—	—	9-472	8-737	8-151	7-684
97	—	—	—	—	—	—	-539	-795	-203	-730
98	—	—	—	—	—	—	-606	-854	-254	-776
99	—	—	—	—	—	—	-673	-912	-306	-822
100	—	—	—	—	—	—	-739	-970	-357	-868

TABLE IV (cont.)

(Y = 4-0-4-9; 51-100% kill)

% kill	Expected probit, Y									
	4-0	4-1	4-2	4-3	4-4	4-5	4-6	4-7	4-8	4-9
51	5-452	5-325	5-229	5-158	5-108	5-072	5-049	5-035	5-028	5-025
52	-493	-363	-264	-190	-138	-101	-076	-062	-054	-051
53	-535	-400	-298	-222	-168	-129	-103	-088	-079	-076
54	-576	-438	-333	-254	-198	-157	-131	-114	-105	-101
55	-617	-475	-367	-286	-228	-186	-158	-140	-131	-128
56	5-659	5-513	5-402	5-318	5-258	5-214	5-185	5-167	5-156	5-151
57	-700	-550	-436	-351	-288	-243	-212	-193	-182	-177
58	-741	-588	-471	-383	-318	-271	-239	-219	-207	-202
59	-783	-626	-505	-415	-348	-299	-266	-245	-233	-227
60	-824	-663	-540	-447	-378	-328	-294	-271	-258	-252
61	5-865	5-701	5-574	5-479	5-408	5-356	5-321	5-298	5-284	5-277
62	-907	-738	-609	-511	-438	-385	-348	-324	-310	-303
63	-948	-776	-643	-543	-468	-413	-375	-350	-335	-328
64	-989	-814	-678	-575	-498	-441	-402	-376	-361	-353
65	6-031	-851	-712	-607	-528	-470	-429	-402	-386	-378
66	6-072	5-889	5-747	5-639	5-558	5-498	5-456	5-429	5-412	5-403
67	-113	-926	-781	-671	-588	-527	-484	-455	-437	-429
68	-155	-964	-816	-703	-618	-555	-511	-481	-463	-454
69	-196	6-001	-851	-735	-648	-583	-538	-507	-489	-479
70	-237	-039	-885	-767	-678	-612	-565	-534	-514	-504
71	6-279	6-077	5-920	5-799	5-708	5-640	5-592	5-560	5-540	5-529
72	-320	-114	-954	-831	-738	-669	-619	-586	-565	-555
73	-361	-152	-989	-863	-768	-697	-647	-612	-591	-580
74	-402	-189	6-023	-895	-798	-725	-674	-638	-617	-605
75	-444	-227	-058	-927	-828	-754	-701	-665	-642	-630
76	6-485	6-265	6-092	5-959	5-858	5-782	5-728	5-691	5-668	5-655
77	-526	-302	-127	-991	-888	-811	-755	-693	-680	-680
78	-568	-340	-161	6-023	-918	-839	-782	-743	-719	-706
79	-609	-377	-196	-055	-948	-868	-809	-770	-744	-731
80	-650	-415	-230	-087	-978	-896	-837	-796	-770	-756
81	6-692	6-452	6-265	6-119	6-008	5-924	5-864	5-822	5-796	5-781
82	-733	-490	-299	-151	-038	-953	-891	-848	-821	-806
83	-774	-528	-334	-183	-068	-981	-918	-874	-847	-832
84	-816	-565	-368	-215	-098	6-010	-945	-901	-872	-857
85	-857	-603	-403	-247	-128	-038	-972	-927	-896	-882
86	6-898	6-640	6-437	6-279	6-158	6-066	6-000	5-953	5-923	5-907
87	-940	-678	-472	-311	-188	-095	-027	-979	-949	-932
88	-981	-716	-506	-343	-216	-123	-054	6-006	-975	-958
89	7-022	-753	-541	-375	-248	-152	-081	-032	6-000	-983
90	-064	-791	-575	-407	-278	-180	-108	-058	-026	6-008
91	7-105	6-828	6-610	6-439	6-308	6-208	6-135	6-084	6-051	6-033
92	-140	-866	-644	-471	-338	-237	-162	-110	-077	-058
93	-188	-903	-679	-503	-368	-265	-190	-137	-102	-084
94	-229	-941	-713	-535	-398	-294	-217	-163	-128	-109
95	-270	-979	-748	-567	-428	-322	-244	-189	-154	-134
96	7-312	7-016	6-783	6-600	6-458	6-350	6-271	6-215	6-179	6-159
97	-353	-054	-817	-632	-488	-379	-298	-242	-205	-184
98	-394	-091	-852	-664	-519	-407	-325	-268	-230	-210
99	-436	-129	-886	-696	-548	-436	-353	-294	-256	-235
100	-477	-166	-921	-728	-578	-464	-380	-320	-281	-260

TABLE IV (cont.)

(Y = 5.0-5.9; 51-100% kill)

% kill	Expected probit, Y									
	5.0	5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8	5.9
51	5.025	5.025	5.023	5.017	5.005	4.985	4.953	4.908	4.840	4.750
52	.050	.050	.048	.043	.032	5.013	.983	.938	.874	.788
53	.075	.075	.074	.069	.059	.041	5.013	.970	.909	.825
54	.100	.100	.100	.096	.087	.070	.043	5.002	.943	.863
55	.125	.126	.125	.122	.114	.098	.073	.034	.978	.901
56	5.150	5.151	5.151	5.148	5.141	5.127	5.103	5.068	5.012	4.938
57	.175	.176	.176	.174	.168	.155	.133	.098	.047	.976
58	.201	.201	.202	.201	.195	.183	.163	.130	.082	5.013
59	.226	.226	.227	.227	.222	.212	.193	.162	.116	.051
60	.251	.252	.253	.253	.250	.240	.223	.194	.151	.088
61	5.276	5.277	5.279	5.279	5.277	5.269	5.253	5.228	5.185	5.126
62	.301	.302	.304	.305	.304	.297	.283	.258	.220	.164
63	.326	.327	.330	.332	.331	.325	.313	.290	.254	.201
64	.351	.352	.355	.358	.358	.354	.343	.322	.289	.239
65	.376	.378	.381	.384	.385	.382	.373	.354	.323	.278
66	5.401	5.403	5.406	5.410	5.412	5.411	5.403	5.386	5.358	5.314
67	.426	.428	.432	.437	.440	.439	.433	.418	.392	.351
68	.451	.453	.458	.463	.467	.467	.463	.450	.427	.389
69	.476	.478	.483	.489	.494	.496	.493	.482	.461	.427
70	.501	.504	.509	.515	.521	.524	.523	.514	.496	.464
71	5.528	5.529	5.534	5.541	5.548	5.553	5.553	5.546	5.530	5.502
72	.551	.554	.560	.568	.575	.581	.583	.578	.565	.539
73	.577	.579	.585	.594	.603	.609	.613	.610	.599	.577
74	.602	.604	.611	.620	.630	.638	.643	.642	.634	.615
75	.627	.630	.637	.646	.657	.666	.673	.674	.668	.652
76	5.652	5.655	5.662	5.673	5.684	5.695	5.703	5.708	5.703	5.690
77	.677	.680	.688	.699	.711	.723	.733	.738	.737	.727
78	.702	.705	.713	.725	.738	.752	.763	.770	.772	.765
79	.727	.730	.739	.751	.765	.780	.793	.802	.803	.802
80	.752	.755	.764	.777	.793	.808	.823	.834	.841	.840
81	5.777	5.781	5.790	5.804	5.820	5.837	5.853	5.868	5.875	5.878
82	.802	.806	.816	.830	.847	.865	.883	.898	.910	.915
83	.827	.831	.841	.856	.874	.894	.913	.930	.944	.953
84	.852	.856	.867	.882	.901	.922	.943	.962	.979	.990
85	.877	.881	.892	.908	.928	.950	.973	.995	6.014	6.028
86	5.902	5.907	5.918	5.935	5.956	5.979	6.003	6.027	6.048	6.066
87	.927	.932	.943	.961	.983	6.007	.033	.059	.083	.103
88	.953	.957	.969	.987	6.010	.036	.063	.091	.117	.141
89	.978	.982	.995	6.013	.037	.064	.093	.123	.152	.178
90	6.003	6.007	6.020	.040	.064	.092	.123	.155	.186	.216
91	6.028	6.033	6.046	6.066	6.091	6.121	6.153	6.187	6.221	6.253
92	.053	.058	.071	.092	.118	.149	.183	.219	.255	.291
93	.078	.083	.097	.118	.146	.178	.213	.251	.290	.329
94	.103	.108	.122	.144	.173	.208	.243	.283	.324	.366
95	.128	.133	.148	.171	.200	.234	.273	.315	.359	.404
96	6.153	6.159	6.174	6.197	6.227	6.263	6.303	6.347	6.393	6.441
97	.178	.184	.199	.223	.254	.291	.333	.379	.428	.479
98	.203	.209	.225	.249	.281	.320	.363	.411	.463	.517
99	.228	.234	.250	.276	.309	.348	.393	.443	.497	.554
100	.253	.259	.276	.302	.336	.376	.423	.475	.531	.592

TABLE IV (cont.)

(Y = 6.0-6.9; 0-50% kill)

% kill	Expected probit, Y									
	6.0	6.1	6.2	6.3	6.4	6.5	6.6	6.7	6.8	6.9
0	2.523	2.132	1.643	1.030	0.261	—	—	—	—	—
1	2.584	2.178	1.694	1.088	0.327	—	—	—	—	—
2	.608	.224	.746	.146	.394	—	—	—	—	—
3	.647	.270	.797	.205	.461	—	—	—	—	—
4	.688	.316	.849	.263	.528	—	—	—	—	—
5	.730	.362	.900	.321	.595	—	—	—	—	—
6	2.771	2.408	1.952	1.380	0.661	—	—	—	—	—
7	.812	.454	2.003	.438	.728	—	—	—	—	—
8	.854	.500	.055	.496	.795	—	—	—	—	—
9	.895	.546	.106	.555	.862	—	—	—	—	—
10	.936	.591	.158	.613	.928	0.067	—	—	—	—
11	2.978	2.637	2.209	1.671	0.995	0.144	—	—	—	—
12	3.019	.683	.201	.730	1.062	.221	—	—	—	—
13	.060	.729	.312	.788	.129	.299	—	—	—	—
14	.102	.775	.364	.846	.196	.376	—	—	—	—
15	.143	.821	.415	.905	.262	.453	—	—	—	—
16	3.184	2.867	2.467	1.963	1.329	0.530	—	—	—	—
17	.226	.913	.518	2.022	.396	.607	—	—	—	—
18	.267	.959	.570	.080	.463	.685	—	—	—	—
19	.308	3.005	.621	.138	.530	.762	—	—	—	—
20	.350	.050	.673	.197	.596	.839	—	—	—	—
21	3.391	3.096	2.724	2.255	1.663	0.916	—	—	—	—
22	.432	.142	.776	.313	.730	.993	0.062	—	—	—
23	.474	.188	.827	.372	.797	1.071	.152	—	—	—
24	.515	.234	.879	.430	.864	.148	.243	—	—	—
25	.556	.280	.930	.488	.930	.225	.333	—	—	—
26	3.598	3.326	2.982	2.547	1.997	1.302	0.423	—	—	—
27	.639	.372	3.033	.605	2.064	.379	.513	—	—	—
28	.680	.418	.085	.663	.131	.457	.603	—	—	—
29	.721	.464	.136	.722	.197	.534	.693	—	—	—
30	.763	.509	.188	.780	.264	.611	.784	—	—	—
31	3.804	3.555	3.239	2.838	2.331	1.688	0.874	—	—	—
32	.845	.601	.291	.897	.398	.766	.964	—	—	—
33	.887	.647	.342	.955	.465	.843	1.054	0.050	—	—
34	.928	.693	.394	3.014	.531	.920	.144	.156	—	—
35	.969	.739	.445	.072	.598	.997	.234	.262	—	—
36	4.011	3.785	3.497	3.130	2.665	2.074	1.324	0.369	—	—
37	.052	.831	.548	.189	.732	.152	.415	.475	—	—
38	.093	.877	.600	.247	.799	.229	.505	.581	—	—
39	.135	.923	.651	.305	.865	.306	.595	.688	—	—
40	.176	.969	.703	.364	.932	.383	.685	.794	—	—
41	4.217	4.014	3.754	3.422	2.999	2.460	1.775	0.900	—	—
42	.259	.060	.806	.480	3.066	.538	.865	1.007	—	—
43	.300	.106	.857	.539	.132	.615	.955	.113	0.035	—
44	.341	.152	.909	.597	.199	.692	2.046	.219	.162	—
45	.383	.198	.960	.655	.266	.769	.136	.326	.289	—
46	4.424	4.244	4.012	3.714	3.333	2.846	2.226	1.432	0.415	—
47	.465	.290	.063	.772	.400	.924	.316	.538	.542	—
48	.507	.336	.115	.830	.466	3.001	.406	.645	.669	—
49	.548	.382	.166	.889	.533	.078	.496	.751	.795	—
50	.589	.428	.218	.947	.600	.155	.580	.857	.922	—

TABLE IV (cont.)

(Y = 6-0-6-9; 51-100% kill)

%	Expected probit, Y									
	6-0	6-1	6-2	6-3	6-4	6-5	6-6	6-7	6-8	6-9
51	4-631	4-473	4-269	4-006	3-667	3-233	2-877	1-964	1-049	—
52	·872	·519	·321	·064	·734	·310	·767	2-070	·175	0-022
53	·713	·565	·372	·122	·800	·387	·857	·176	·302	·175
54	·755	·611	·424	·181	·867	·464	·947	·283	·429	·327
55	·796	·857	·475	·239	·934	·541	3-037	·389	·555	·480
56	4-837	4-703	4-527	4-297	4-001	3-619	3-127	2-495	1-682	0-632
57	·879	·749	·578	·356	·068	·218	·602	·809	·784	—
58	·920	·795	·630	·414	·134	·773	·308	·708	·935	·937
59	·901	·841	·681	·472	·201	·850	·398	·814	2-002	1-089
60	5-003	·887	·733	·531	·268	·927	·488	·921	·189	·242
61	5-044	4-932	4-784	4-589	4-335	4-005	3-778	3-027	2-315	1-394
62	·085	·978	·836	·647	·401	·082	·668	·133	·442	·546
63	·127	5-024	·887	·706	·468	·159	·758	·240	·569	·699
64	·168	·070	·939	·704	·535	·236	·849	·346	·695	·851
65	·209	·116	·990	·623	·602	·313	·939	·452	·822	2-004
66	5-251	5-162	5-042	4-881	4-669	4-391	4-029	3-559	2-949	2-156
67	·292	·208	·093	·939	·735	·468	·119	·665	3-075	·308
68	·333	·254	·145	·998	·602	·545	·209	·771	·202	·461
69	·375	·300	·196	5-056	·869	·622	·299	·878	·329	·613
70	·416	·346	·248	·114	·936	·700	·300	·984	·455	·766
71	5-457	5-392	5-299	5-173	5-003	4-777	4-480	4-090	3-582	2-918
72	·499	·437	·351	·231	·069	·854	·570	·197	·709	3-070
73	·540	·483	·402	·289	·136	·931	·660	·303	·835	·223
74	·581	·520	·454	·348	·203	5-008	·750	·409	·962	·375
75	·623	·575	·505	·406	·270	·066	·840	·516	4-089	·528
76	5-664	5-621	5-557	5-464	5-336	5-163	4-930	4-622	4-215	3-680
77	·705	·667	·608	·523	·403	·240	5-021	·728	·342	·832
78	·747	·713	·680	·581	·470	·317	·111	·835	·469	·985
79	·788	·759	·711	·639	·537	·394	·201	·941	·595	4-137
80	·829	·805	·763	·698	·604	·472	·291	5-047	·722	·290
81	5-870	5-851	5-814	5-756	5-670	5-540	5-381	5-154	4-840	4-442
82	·912	·896	·866	·815	·737	·626	·471	·260	·975	·594
83	·953	·942	·917	·873	·804	·703	·561	·366	5-102	·747
84	·994	·988	·969	·931	·871	·780	·652	·473	·229	·899
85	6-036	6-034	6-020	·990	·938	·858	·742	·579	·355	5-052
86	6-077	6-080	6-072	6-048	6-004	5-935	5-832	5-685	5-482	5-204
87	·118	·128	·123	·106	·071	6-012	·922	·792	·609	·356
88	·160	·172	·175	·165	·138	·089	6-012	·898	·735	·509
89	·201	·218	·226	·223	·205	·166	·102	0-004	·802	·661
90	·242	·264	·278	·281	·272	·244	·192	·111	·988	·814
91	6-284	6-310	6-329	6-340	6-338	6-321	6-283	6-217	6-115	5-966
92	·325	·355	·381	·398	·405	·398	·373	·323	·242	6-118
93	·366	·401	·432	·456	·472	·475	·463	·430	·368	·271
94	·408	·447	·484	·515	·539	·553	·553	·536	·495	·423
95	·449	·493	·535	·573	·605	·630	·643	·642	·622	·576
96	6-490	6-539	6-587	6-631	6-672	6-707	6-733	6-749	6-748	6-728
97	·532	·585	·638	·690	·739	·784	·824	·855	·875	·880
98	·573	·631	·690	·748	·806	·861	·914	·961	7-002	7-033
99	·614	·677	·741	·807	·873	·939	7-004	7-068	·128	·185
100	·656	·723	·793	·865	·939	7-016	·094	·174	·255	·338

TABLE IV (cont.)

(Y = 7-0-7-9; 51-100% kill)

%	Expected probit, Y									
	7-0	7-1	7-2	7-3	7-4	7-5	7-6	7-7	7-8	7-9
51	—	—	—	—	—	—	—	—	—	—
52	—	—	—	—	—	—	—	—	—	—
53	—	—	—	—	—	—	—	—	—	—
54	—	—	—	—	—	—	—	—	—	—
55	—	—	—	—	—	—	—	—	—	—
56	—	—	—	—	—	—	—	—	—	—
57	—	—	—	—	—	—	—	—	—	—
58	—	—	—	—	—	—	—	—	—	—
59	—	—	—	—	—	—	—	—	—	—
60	0-013	—	—	—	—	—	—	—	—	—
61	0-198	—	—	—	—	—	—	—	—	—
62	·383	—	—	—	—	—	—	—	—	—
63	·568	—	—	—	—	—	—	—	—	—
64	·753	—	—	—	—	—	—	—	—	—
65	·939	—	—	—	—	—	—	—	—	—
66	1-124	—	—	—	—	—	—	—	—	—
67	·309	0-003	—	—	—	—	—	—	—	—
68	·494	·231	—	—	—	—	—	—	—	—
69	·680	·458	—	—	—	—	—	—	—	—
70	·805	·685	—	—	—	—	—	—	—	—
71	2-050	0-913	—	—	—	—	—	—	—	—
72	·235	1-140	—	—	—	—	—	—	—	—
73	·420	·307	—	—	—	—	—	—	—	—
74	·606	·505	0-263	—	—	—	—	—	—	—
75	·791	·822	·545	—	—	—	—	—	—	—
76	2-978	2-050	0-827	—	—	—	—	—	—	—
77	3-161	·277	1-108	—	—	—	—	—	—	—
78	·347	·504	·390	—	—	—	—	—	—	—
79	·532	·732	·672	0-265	—	—	—	—	—	—
80	·717	·959	·954	·618	—	—	—	—	—	—
81	3-902	3-186	2-236	0-971	—	—	—	—	—	—
82	4-087	·414	·518	1-324	—	—	—	—	—	—
83	·273	·641	·800	·677	0-175	—	—	—	—	—
84	·458	·868	3-082	2-030	·621	—	—	—	—	—
85	·643	4-096	·364	·383	1-068	—	—	—	—	—
86	4-828	4-323	3-645	2-736	1-514	—	—	—	—	—
87	5-014	·551	·927	3-089	·901	0-438	—	—	—	—
88	·109	·778	4-209	·442	2-406	1-008	—	—	—	—
89	·384	5-005	·491	·795	·854	·579	—	—	—	—
90	·569	·233	·773	4-148	3-301	2-149	0-581	—	—	—
91	5-754	5-460	5-055	4-601	3-747	2-720	1-317	—	—	—
92	·940	·687	·337	·854	4-194	3-200	2-054	0-356	—	—
93	6-125	·915	·619	5-207	·640	·801	·790	1-316	—	—
94	·310	6-142	·901	·560	5-087	4-431	3-526	2-275	0-542	—
95	·495	·369	6-182	·914	·533	5-002	4-262	3-235	1-806	—
96	6-681	6-597	6-464	6-267	5-980	5-572	4-998	4-194	3-069	1-493
97	·866	·824	·746	·620	6-426	6-143	5-735	5-154	4-333	3-173
98	7-051	7-051	7-028	·973	·873	·713	6-471	6-114	5-596	4-853
99	·236	·279	·310	7-326	7-319	7-284	7-207	7-073	6-859	6-533
100	·421	·506	·592	·679	·766	·854	·943	8-033	8-123	8-213

TABLE VI Percentage Points of the χ^2 Distribution. ϕ is the number of degrees of freedom.^a

ϕ	P (%)														
	99.5	99	97.5	95	90	75	50	25	10	5	2.5	1	0.5	0.1	ϕ
1	0.010	0.020	0.051	0.103	0.216	0.575	1.32	2.77	4.61	5.99	7.38	8.63	9.21	10.8	1
2	0.072	0.115	0.216	0.352	0.584	1.21	2.37	4.11	6.25	7.81	9.35	11.3	12.8	16.3	2
3	0.207	0.297	0.484	0.711	1.06	1.92	3.36	5.39	7.78	9.49	11.1	13.3	14.9	18.5	3
4	0.412	0.554	0.831	1.15	1.61	2.67	4.35	6.63	9.24	11.1	12.8	15.1	16.7	20.5	4
5	0.676	0.872	1.24	1.64	2.20	3.45	5.35	7.84	10.6	12.6	14.4	16.8	18.5	22.5	5
6	0.989	1.24	1.69	2.17	2.83	4.25	6.35	9.04	12.0	14.1	16.0	18.5	20.3	24.3	6
7	1.34	1.65	2.18	2.73	3.49	5.07	7.34	10.2	13.4	15.5	17.5	20.1	22.0	26.1	7
8	1.73	2.09	2.70	3.33	4.17	5.90	8.34	11.4	14.7	16.9	19.0	21.7	23.6	27.9	8
9	2.16	2.56	3.25	3.94	4.87	6.74	9.34	12.5	16.0	18.3	20.5	23.2	25.2	29.6	9
10	2.60	3.05	3.82	4.57	5.58	7.58	10.3	13.7	17.3	19.7	21.9	24.7	26.8	31.3	10
11	3.07	3.57	4.40	5.23	6.30	8.44	11.3	14.8	18.5	21.0	23.3	26.2	28.3	32.9	11
12	3.57	4.11	5.01	5.89	7.04	9.30	12.3	16.0	19.8	22.4	24.7	27.7	29.8	34.5	12
13	4.07	4.66	5.63	6.57	7.79	10.2	13.3	17.1	21.1	23.7	26.1	29.1	31.3	36.1	13
14	4.60	5.23	6.26	7.26	8.55	11.0	14.3	18.2	22.3	25.0	27.5	30.6	32.8	37.2	14
15	5.14	5.81	6.91	7.96	9.31	11.9	15.3	19.4	23.5	26.3	28.8	32.0	34.3	39.3	15
16	5.70	6.41	7.56	8.67	10.1	12.8	16.3	20.5	24.8	27.6	30.2	33.4	35.7	40.8	16
17	6.26	7.01	8.23	9.39	10.9	13.7	17.3	21.6	26.0	28.9	31.5	34.8	37.2	42.3	17
18	6.84	7.63	8.91	10.1	11.7	14.6	18.3	22.7	27.2	30.1	32.9	36.2	38.6	43.8	18
19	7.43	8.26	9.59	10.9	12.4	15.5	19.3	23.8	28.4	31.4	34.2	37.6	40.0	45.3	19
20	8.03	8.90	10.3	11.6	13.2	16.3	20.3	24.9	29.6	32.7	35.5	38.9	41.4	46.8	20
21	8.64	9.54	11.0	12.3	14.0	17.2	21.3	26.0	30.8	33.9	36.8	40.3	42.8	48.3	21
22	9.26	10.2	11.7	13.1	14.8	18.1	22.3	27.1	32.0	35.2	38.1	41.6	44.2	49.7	22
23	9.89	10.9	12.4	13.8	15.7	19.0	23.3	28.2	33.2	36.4	39.4	43.0	45.6	51.2	23
24	10.5	11.5	13.1	14.6	16.5	19.9	24.3	29.3	34.4	37.7	40.6	44.3	46.9	52.6	24
25	11.2	12.2	13.8	15.4	17.3	20.8	25.3	30.4	35.6	38.9	41.9	45.6	48.3	54.1	25
26	11.8	12.9	14.6	16.2	18.1	21.7	26.3	31.5	36.7	40.1	43.2	47.0	49.6	55.5	26
27	12.5	13.6	15.3	16.9	18.9	22.7	27.3	32.6	37.9	41.3	44.5	48.3	51.0	56.9	27
28	13.1	14.3	16.0	17.7	19.8	23.6	28.3	33.7	39.1	42.6	45.7	49.6	52.3	58.3	28
29	13.8	15.0	16.8	18.5	20.6	24.5	29.3	34.8	40.3	43.8	47.0	50.9	53.7	59.7	29
30															30

^a Table A-7 is taken from Fisher and Yates *Statistical Tables for Biological, Agricultural and Medical Research*, published by Oliver & Boyd Ltd., Edinburgh, and by permission of the authors and publishers.

ประวัติ

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