Observations on Norway Rats, *Rattus norvegicus*, in Kodiak, Alaska

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Trapping in the city of Kodiak and vicinity in January and September 1974 yielded 59 Norway Rats (*Rattus norvegicus*). Immature rats were collected in both months; only one of ten adult females was pregnant in January and none of eight in September. Most rats were in the city, and no wild populations were found. Fifty-eight of the rats were in good physical condition; ectoparasites were not abundant.

Key Words: Norway Rats, *Rattus norvegicus*, ecology, biology, reproduction, body weight, body size, trapping, ectoparasites, Alaska.

An increasing number of complaints since 1971 of Norway Rats, *Rattus norvegicus*, in the city of Kodiak and vicinity prompted environmental surveys in January and September 1974 with the ultimate purpose of improving the local rat control program. The first appearance of rats in the Kodiak Archipelago is unrecorded, but Clark (1958), Manville and Young (1965), and others have reported their presence in more recent times. Probably, as Rausch (1969) stated, the rat became established soon after the arrival of Europeans. Kodiak (57°47′N, 152°24′W), founded in 1792 and the capital of Alaska until 1804, grew into an important fishing port on the northeast coast of Kodiak Island, the largest of the Archipelago (over 9360 km^2). By 1973 the greater Kodiak area had a population of 9049 (Alaska Department of Economic Development 1973), and in 1974 there were 14 seafood processing plants along the shore in and near the city.

Materials and Methods

In January, large snap traps were baited with fresh coconut and set in 22 localities in the city, based on records of complaints and on visual detection of rat sign. Stations were both inland and along the shore, and included seafood processing plants, the small boat harbor, and business and residential areas. Traps were set outside the city at the refuse dump and at a remote wild area on Monashka Bay near the mouth of Pillar Creek, 2.6 km from the city. Snap-trapped rats were examined for injuries and ectoparasites and were weighed on a triple-beam balance. Standard body measurements were recorded before dissections were made.

In September, large National live traps baited with fresh coconut were set at only one locality, a sloping, open brushy area beside the seafood processing plants at the base of Pillar Mountain, where a high abundance of rats had been noted in January. Live-trapped rats were individually anaesthetized with ether, examined, and weighed. Body measurements were not taken nor were dissections made.

Results and Discussion

The January collection consisted of 30 Norway Rats from and near the city of Kodiak. No rats were trapped in wild terrain at Monashka Bay. Wild populations of Norway Rats occur along the shore lines of Aleutian islands such as Adak (Schiller 1952), Amchitka (Brechbill 1977), and Rat (Murie 1959). In September 29 rats were live-trapped near seafood processing plants in Kodiak. Trapping records of the two surveys are given in Table 1.

Rats are grouped by age and sex in Table 2. Of the 59 specimens, 34 (58 percent) were adults, 25 (42 percent) were immature individuals, 26 (44 percent) were males, and 33 (56 percent) were females. Age of the September catch was based mainly on body weights (Table 2), since specimens were not dissected. In January, all adults weighing over 200 g had heavy bodies with considerable amounts of fat deposited in the body cavity, and immature rats had slender bodies. These body types are normal according to Calhoun (1963) when rats have access to more food than required to fulfil demands for optimum growth.

One of ten adult females collected in January had two embryos and another was in pre-estrous. The embryos measured 30 and 33 mm, and birth would have occurred on about 17 January. This female probably had access to buildings. The female in pre-

TABLE 1. Records of *Rattus norvegicus* trapped at Kodiak, Alaska, January and September 1974.

Date	Traps Set	Traps Sprung or Missing	Rats Trapped	Adjusted % Trap Success
January (Various localities; snap traps)				
9	10	2	2	25
10	24	7	5	29
11	23	4	4	21
12	17	1	1	6
13	27	4	5	22
14	27	6	4	19
15	32	13	7	37
16	2*	2*	0	—
17	6*	0*	2	33
Total or Average	168	39	30	23
September (Near seafood processing plants; live traps)				
19	20	4	10	63
21	15	0	10	67
22	10	2	5	63
23	7	0	4	57
Total or Average	52	6	29	63

*Excludes traps buried by snow.

estrous was trapped in a converted garage. The pregnant female had placental scars, but the pre-estrous one had none, suggesting no previous breeding. In September, three of eight adult females examined externally had enlarged nipples indicating current or recent lactation. Some breeding in January was expected because the climate is relatively mild and some rats live entirely or partly indoors. In the more severe climate of Nome, Schiller (1956) found no pregnant rats in January. On Adak in May he found 17 percent of mature females pregnant with 5 to 19 embryos (average 12) (Schiller 1952).

Physical injuries were observed on one rat. A female trapped in January had all its toes missing. Ectoparasites were not abundant. Six northern rat fleas (*Nosopsyllus fasciatus*), one spined rat louse egg (*Polyplax spinulosa*), and three mites (*Androlaelaps fahrenholzi*) were collected from the rats in January; 15 northern rat fleas and four spined rat louse adults were collected in September.

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Literature Cited

Alaska Department of Economic Development, Division of Economic Enterprise. 1973. A community profile, Kodiak, Alaska. 4 pp.

Brechbill, R. A. 1977. Status of the Norway rat. Pp. 261–267 *in* The environment of Amchitka Island, Alaska. *Edited by* M. L. Merritt and R. G. Fuller. National Technical Information Center, Energy Research and Development Administration, TID-26712.

Calhoun, J. B. 1963. The ecology and sociology of the Norway rat. United States Public Health Service Publication No. 1008. 288 pp.

Clark, W. K. 1958. The land mammals of the Kodiak Islands. Journal of Mammalogy 39: 574–577.

Manville, R. H., and **S. P. Young.** 1965. Distribution of Alaskan mammals. United States Department of the Interior, Bureau of Sport Fisheries and Wildlife Circular 211. 74 pp.

Murie, O. J. 1959. Fauna of the Aleutian Islands and Alaska Peninsula. North American Fauna 61: 1–406.

Rausch, R. L. 1969. Origin of the terrestrial mammalian fauna of the Kodiak Archipelago. Pp. 216–234 *in* The Kodiak Island refugium: its geology, flora, fauna and history. *Edited by* T. N. V. Karlstrom and G. E. Ball.

TABLE 2. Mean body weights and measurements ± standard error (range in parentheses) of *Rattus norvegicus* trapped in the city of Kodiak and vicinity, Alaska, January and September 1974. N denotes sample size.

Age and Sex	N	Body Weight (g)	Standard Measurements (mm)			
			Total Length	Tail	Hind Foot	Ear
			January			
Adult males	4	309 ± 28.7 (248–371)	375 ± 9.3 (350–392)	165 ± 3.4 (159–172)	40 ± 1.3 (40–46)	19 ± 0.8 (17–21)
Immature males	8	78 ± 9.2 (55–139)	232 ± 11.2 (194–296)	100 ± 7.1 (71–131)	34 ± 1.1 (29–39)	16 ± 0.2 (16–17)
Adult females	10	233 ± 24.2 (140–372)	352 ± 9.9 (311–420)	163 ± 5.1 (146–194)	40 ± 0.6 (38–44)	18 ± 0.5 (16–20)
Immature females	8	72 ± 8.1 (57–127)	234 ± 10.4 (207–300)	100 ± 6.7 (74–133)	32 ± 0.8 (28–35)	16 ± 0.3 (15–17)
Total	30					
			September			
Adult males	12	265 ± 16.4 (196–373)				
Immature males	2	125 ± 4.5 (120–129)				
Adult females	8	257 ± 23.0 (187–402)		(not taken)		
Immature females	7	92 ± 3.7 (79–105)				
Total	29					

Boreal Institute, University of Alberta. Ryerson Press, Toronto.

Schiller, E. L. 1952. Studies on the helminth fauna of Alaska. V. Notes on Adak rats (*Rattus norvegicus* Berkenhout) with special reference to helminth parasites. Journal of Mammalogy 33: 38–49.

Schiller, E. L. 1956. Ecology and health of *Rattus* at Nome, Alaska. Journal of Mammalogy 37: 181–188.

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