Russian Journal of Herpetology Vol. 13, No. 2, 2006, pp. 101 – 116

ON THE DISTRIBUTION AND ECOLOGY OF AMPHIBIANS AND REPTILES IN THE SOUTH OF THE RUSSIAN FAR EAST

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Submitted April 4, 2005.

The paper reports on the distribution and ecology of amphibians and reptiles in the south of the Russian Far East, including previously unstudied areas within Khabarovsk Kray, Primorskiy Kray, and Yevreyskaya Autonomous Oblast' (209 localities in total) studied in 1998 – 2004.

Keywords: Russian Far East, Amphibians, Reptiles, distribution.

INTRODUCTION

This paper reports on the distribution and ecology of amphibians and reptiles in the south of the Russian Far East (RFE), including previously unstudied areas within Khabarovsk Kray, Primorskiy Kray, and Yevreyskaya Autonomous Oblast' studied since mid-1998 through autumn 2004. The paper is based on original observations of the authors as well as personal communications of other people. All records of amphibians and reptiles are listed and mapped in chronological order. Other data on the distribution and ecology of amphibians and reptiles in the RFE have been published earlier (Adnagulov et al., 2000).

Systematic names are given after last published lists of amphibians and reptiles of Russia (Ananjeva et al., 2004; Kuzmin and Maslova, 2003). Amphibian larvae development stages were determined following Sytina et al. (1987) and Dabagyan and Sleptsova (1975). Length (L) corresponds to Snout Vent Length (SVL) in anurans, SVL + Tail Length (TL) in all reptiles, except turtles and carapace length in turtles.

Abbreviations of the administrative territories and nature protected areas:

Khabarovsk Kray (KhK): AR, Amurskiy Rayon; BR, Bikinskiy Rayon; VaR, Vaninskiy Rayon; VBR, Verkhnebureinskiy Rayon; KR, Komsomol'skiy Rayon; LaR, Lazo Rayon; NaR, Nanayskiy Rayon; SGR, Sovetskaya Gavan' Rayon; SR, Solnechnyy Rayon; TChR, Tuguro-Chumikanskiy Rayon; KhR, Khabarovsk Rayon. **Yevreyskaya Autonomous Oblast' (YeAO):** BrR, Birobidzhan Rayon; LR, Leninskiy Rayon; ObR, Obluchenskiy Rayon; OkR, Oktyabr'skiy Rayon; SmR, Smidovichskiy Rayon. **Primorskiy Kray (PK):** KiR, Kirovskiy Rayon; LZR, Lesozavodskiy Rayon; YaR, Yakovlevskiy Rayon.

Institutional abbreviations. IWEP FEB RAS, Institute of Water and Ecological Problems (Far East Branch, Russian Academy of Sciences).

Other abbreviations: ad, adult; a.s.l., above sea level; juv, juvenile; R., river; sad, subadult; SNR, State Nature Reserve.

RESULTS

AMPHIBIANS

***Salamandrella keyserlingii* Dybowsky, 1870** (Fig. 1)

1. KhK, KhR, vicinity of Khabarovsk City, upper Krasnaya R., mixed coniferous-deciduous forest, pools on the vistas and along forest roads, clutches, ad; 1999 – 2003. The species is quite common in late April – early May.

2. YeAO, ObR, vicinity of Teplyye Klyuchi, Bidzhan R. valley, mixed coniferous-deciduous forest, 1 ad female (flattened by vehicle wheels); 08/15/1998.

3. YeAO, LR, outskirts of Novotroitskoye, edge of light birch-oak forest, 2 sad; 08/22/1998.

4. KhK, AR, Bolonskiy SNR, interstream area of Simmi and Sel'gon R., Relochnaya Tsep', marshy grass-sedge meadow, 2 clutches; 05/18 – 20/1999.

5. YeAO, SmR, north-east shore of Lake Zabelovskoye, edge of birch-aspen forest, 2 ad; 08/04/1999.

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1026-2296/2006/1302-0101

Fig. 1. Distribution of *Salamandrella keyserlingii*, *Hyla japonica*, and *Bombina orientalis* in the Russian Far East.

6. KhK, KR, Gur R. Valley, ~12 km southwards of Snezhnyy, mixed coniferous-deciduous forest, clutches in road ditches; 05/14 – 15/2002.

7. KhK, KR, Gur R. basin, Yuli R. valley, secondary fir-deciduous forest, ditches along waste timber carrying road, clutches, 2 males; 05/16 – 17/2002.

8. KhK, KhR, vicinity of Bychikha, Bol'shekhekhtsirskiy SNR, interstream area between Bykova and Polovinka R., mixed coniferos-broad-leaved forest, 10 clutches; 05/03 – 04/2003.

9. KhK, NaR, Dubovyy Mys; 06/24/2003. Local people say the species is common in the village sur-

rounds (A. G. Gubarets, 2003: personal communication).

10. YeAO, ObR, Bastak SNR, In R. basin, middle Bastak R., marshy light larch forest, 1 clutch; 05/06/2004.

11. YeAO, ObR, Bastak SNR, Bira R. basin, upper Ikura R. area, mixed coniferous-broad-leaved forest, pools on waste road, 23 egg clutches at 2 – 4 stages; 05/02/2004. In the same place were 8 clutches at 24 – 26 stages; 06/16/2004.

***Bufo gargarizans* Cantor, 1842** (Fig. 2)

12. YeAO, ObR, vicinity of Teplyye Klyuchi, Bidzhan R. valley, mixed coniferous-deciduous forest, 1 ad male; 08/16/1998.

13. KhK, AR, northern outskirts of Amursk Town, waste area, temporary pond, clutches, 05/16/1999.

14. YeAO, ObR, Amur R. valley near Srednyaya R. mouth (~4 km downstream of Radde), edge of mixed coniferous-broad-leaved forest, 1 ad female; 07/16/1999. Toad was met at the night time (close midnight).

15. YeAO, SmR, north-east shore of Lake Ulanovskoye, edge of birch-aspen forest, 1 ad female; 08/06/1999.

16. KhK, KR, Komsomol'skiy SNR, Gorin R. valley, Tikhaya point, 2 sad, 1 ad female; 07/18/2000.

17. KhK, KR, Komsomol'skiy SNR, Gorin R. valley, Zolotoy point, 1 ad female; 07/20/2000.

18. KhK, KR, Komsomol'skiy SNR, Gorin R. valley, Bichi point, 3 sad, 2 ad males, 3 ad females; 07/24/2000.

19. KhK, KR, Gur R. valley, ~12 km southwards of Snezhnyy, mixed coniferous and deciduous forest, clutches in the road ditches; 05/14 – 15/2002.

20. KhK, KR, Gur R. basin, Yuli R. valley, secondary fir-deciduous forest, ditches along waste timber carrying road, egg clutches; 05/16 – 17/2002.

21. KhK, NaR, Anuy R. basin, middle Bolé R. valley (tributary of Manoma R.), deciduous forest, 1 ad female; 05/20/2002.

22. KhK, NaR, Anuy R. basin, Kupturku R. valley, coniferous-deciduous forest, 1 ad male; 22.05.2002.

23. KhK, NaR, Lake Gassi basin, middle Kartanga R. (tributary of Khar R.), coniferous-deciduous forest, edge of forest road, 1 ad male; 05/24/2002.

24. KhK, SGR, Bol'shaya Khadya R. basin, interstream area of Bol'shaya Khadya and Tutto rivers, ~8 km to southwest from Gatka, regenerating burnt-out forest, beside forest road, 1 ad female; 07/15/2002. This record seems the first authentically one of that species on the North-East Sikhote-Alin' area.

25. KhK, SR, Amgun' R. valley, vicinity of railway station Éanga, secondary birch and larch forest, 1 ad (SVL ~75 mm); 09/05/2002 (A. A. Gulevich, 2002: personal communication).

26. KhK, KhR, outskirts of Bychikha, secondary deciduous forest, artificial pond, egg clutches, 7 ad males, 3 ad females; 05/03 – 04/2003.

27. KhK, BR, middle Samur R. valley (tributary of Bikin R.), broad-leaved forest, clutches, tadpoles at 28 – 33 stages, 7 ad males, 5 ad females; 05/18 – 21/2003.

28. KhK, LaR, Khor R. basin, lower Sagdy-Selanka R. (tributary of Kafe R.), coniferous and birch forest, south-east stony slope of a hill, ~600 m a.s.l.; 1 ad; 06/10/2003 (T. N. Tolmacheva, 2003: personal communication).

29. KhK, NaR, Dubovyy Mys; 06/21 – 28/2003. Adult toads were met occasionally in the village and its surroundings at the night time searching for prey.

30. KhK, NaR, Lake Gassi basin, lower Kartanga R. (Khar R. tributary), mixed coniferous-deciduous forest, 1 ad female; 06/24/2003. Toad was met under fallen tree at the day rest.

31. KhK, NaR, Lake Gassi basin, lower Kartanga R. (Khar R. tributary), mixed coniferous-deciduous forest, a pool aside forest road, larvae at 34 – 40 stages; 06/26/2003.

32. KhK, SR, Khurmulinskaya Mar' (~8 km to the north-east of Khurmuli village), birch-larch forest with deciduous trees, 2 individuals (SVL ~50 mm); 08/05/2003 (A. G. Roslyakov, 2003: personal communication).

33. KhK, VaR, Tumnin R. basin, vicinity of Us'ka-Orochskaya, lower Khudyami R. valley (~4 km upstream of river mouth), regenerating burnt-out and cut-out forest, 2 ad individuals; 08/16 – 18/2003 (A. G. Roslyakov, 2003: personal communication).

34. KhK, KhR, vicinity of Korfovskiy, slope of a mount, edge of mixed coniferous and broad-leaved forest, 2 ad individuals (SVL ~50 – 60 mm); 09/05/2003 (A. G. Roslyakov, 2003: personal communication).

***Bufo raddei* Strauch, 1876** (Fig. 2)

35. YeAO, LR, outskirts of Bidzhan village, bushy waste grounds, 1 sad, 2 ad females; 08/27/1998.

36. KhK, Khabarovsk City, edge of block on the Amurskaya arm bank, bush-grassy sand beach, 1 sad; 07/01/2003 (E. V. Novomodnyi, 2003: personal communication). A specimen was collected by E. V. Novomodnyi, kept in IWEP FEB RAS.

Fig. 2. Distribution of *Bufo gargarizans* and *B. raddei* in the Russian Far East.

37. YeAO, LR, vicinity of Dezhnevo, sand bar in lower Bidzhan R., 1 ad male, 06/27/2004.

***Bombina orientalis* (Boulenger, 1890)** (Fig. 1)

38. KhK, NaR, Lake Gassi basin, middle Kartanga R. (tributary of Khar R.), mixed coniferous deciduous forest, small ponds beside forest road, 7 ad males; 05/24/2002.

***Hyla japonica* Günther, 1859** (Fig. 1)

39. YeAO, BrR, outskirts of Krasnyy Vostok, bushy bank of Bira R., single males' calls; 08/29/1998.

40. YeAO, BrR, south-east foot of Ul'dura Ridge, waste quarry, edge of oak forest, 1 juv, 1 ad male; 08/30/1998.

41. KhK, AR, east of Lake Bolon' (~2 km of Nergul' Cape to south east), meadow on the birch-aspen forest's edge, small pond beside main lake, single males' calls; 05/24/1999.

42. YeAO, ObR, vicinity of Radde settlement, Lagar R. valley, mixed coniferous and broad-leaved forest, shallow ponds on the forest road, larvae at different stages; 07/17/1999.

43. YeAO, OkR, vicinity of Yekaterino-Nikol'skoye, Amur R. bank, Medvezhiy Utes foot, 1 ad male; 07/20/1999.

44. YeAO, SmR, surroundings of Bira R. mouth, flood-plain meadow, males' calls; 07/28 – 29/1999.

45. YeAO, SmR, north-east shore of Lake Ulanovskoye, meadow, males' calls; 08/06/1999.

46. KhK, KR, Komsomol'skiy SNR, Gorin R. valley, surroundings of Siutaru R. mouth, valley deciduous forest, single males' calls; 07/21 – 22/2000.

47. KhK, KR, Komsomol'skiy SNR, Bichi point, 1 ad male; 07/24/2000.

48. KhK, KR, Komsomol'skiy SNR, Prokop point, single males' calls; 07/27/2000.

49. KhK, KR, edges of larch-birch forests, vicinities of railway stations El'digan, Poni, numerous males' calls at late evening and night time; 07/22/2001.

50. KhK, NaR, Dubovyy Mys, tadpoles, juveniles, 5 ad males, 3 ad females; 08/24 – 30/2001. The species in common in the village surrounds.

51. KhK, KR, Gur R. basin, lower Khoso R. valley, secondary fir-deciduous forest; ditches along waste timber carrying road, 1 ad female; 05/16/2002.

52. KhK, KR, Gur R. basin, Yuli R. valley, secondary fir-deciduous forest; ditches along deserted timber carrying road, clutches, 2 ad males, 3 ad females; 05/16 – 17/2002.

53. YeAO, BrR, middle Birushka R., road ditches, males' calls; 06/06/2002.

54. YeAO, OkR, Dobraya R. basin, upper Listvyanka R. (tributary of Osinovka R.), meadow, single males' calls; 06/19/2002.

55. KhK, BR, middle Samur R. (tributary of Bikin R.), edge of valley broad-leaved forest, single males' calls; 05/18 – 21/2003.

56. KhK, NaR, Dubovyy Mys, single males' calls; 06/21 – 28/2003.

57. PK, YaR, vicinity of Pokrovka, lower Arsen'yevka R. valley, ash-elm forest, male calls; 08/16/2004.

***Rana amurensis* Boulenger, 1886** (Fig. 3)

58. YeAO, LR, outskirts of Novotroitskoye, edge of bushy oak forest, 2 sad; 08/22/1998.

59. YeAO, LR, outskirts of Bidzhan village, bushy waste grounds, 1 sad, 1 ad female, 2 ad males; 08/27/1998.

60. YeAO, BrR, outskirts of Krasnyy Vostok, water-filled gravel quarry, 1 ad male; 08/29/1998.

61. YeAO, BrR, south-east foots of Ul'dura Ridge, waste quarry, edge of oak forest, 2 juv, 1 ad male; 08/30/1998.

62. KhK, AR, northern outskirts of Amursk Town, 1 ad male, egg clutches, larvae at 12 – 13 stages; 05/16/1999.

63. KhK, AR, Bolonskiy SNR, right shore of Lake Al'bite, edge of willow-aspen forest, 2 sad; 05/19/1999.

64. KhK, NaR, Bolonskiy SNR, Simmi R. basin, ~6 km to south-west of Kirpu R. mouth, moss-sedge bog with dwarf birch shrubs, a temporary pond ~400 m^2 surface, larvae at 12 – 13 stages; 05/20/1999.

65. KhK, AR, Bolonskiy SNR, interstream area of Simmi and Sel'gon rivers, Relochnaya Tsep', marshy grass-sedge meadows, tadpoles at 34 – 37 stages; 05/18 – 20/1999.

66. YeAO, ObR, left bank of Amur R., close to Dichun R. mouth, 1 ad, 07/17/1999.

67. YeAO, SmR, north-west shore of Lake Zabelovskoye, edge of birch-aspen forest, 1 sad; 05/04/1999.

68. KhK, KR, Komsomol'skiy SNR, Gorin R. valley, Tikhaya point, 10 juv, 1 sad, 1 ad male; 07/18/2000.

69. KhK, KR, Komsomol'skiy SNR, Gorin R. valley, Zolotoy creek mouth, deciduous forest, 1 ad male; 07/20/2000.

70. KhK, VaR, Tatarskiy Proliv coast, Lake Toki (~12 km to north-east of Vanino), boundary of light birch-larch forest and sedge-mossy marsh, 2 ad males; 07/26/2001.

71. KhK, VaR, Tatarskiy Proliv coast, Lake Toki (~12 km to north-east of Vanino), marshy shore of Lake Toki, 1 sad, 1 ad female; 07/28/2001.

72. KhK, Gur R. basin, Yuli R. valley, secondary fir-deciduous forest, ditches along waste timber-carrying road, 1 ad female; 05/17/2002.

73. KhK, NaR, Anuy R. basin, Kupturku R. valley, mixed coniferous-deciduous forest, 1 ad male; 05/22/2002.

74. YeAO, BrR, south-east foots of Ul'dura Ridge, waste quarry, edge of oak forest, 1 sad; 06/08/2002.

75. KhK, LaR, vicinity of Georgiyevka, Khor R., bank of Bol'shaya arm, 1 ad female; 06/13/2002.

76. YeAO, OkR, Dobraya R. basin, upper Listvyanka R. (tributary of Osinovka R.), meadow, 1 ad male; 06/19/2002.

77. PK, YaR, vicinity of Yablonovka, lower Arsen'yevka R. valley, bushy grass meadow, 1 juv (SVL 28 mm); 08/17/2004.

***Rana dybowskii* Günther, 1876** (Fig. 3)

78. YeAO, ObR, vicinity of Teplyye Klyuchi, Bidzhan R. valley, mixed coniferous-deciduous forest, 5 juv, 1 sad, 5 males; 08/13/1998.

79. YeAO, ObR, vicinity of Teplyye Klyuchi, Bidzhan R. valley, mixed coniferous-deciduous forest, 7 ad females, 2 ad males; 08/15/1998.

80. YeAO, ObR, vicinity of Teplyye Klyuchi, Bidzhan R. valley, near Berezovaya R. mouth, 2 sad; 08/18/1998.

81. YeAO, LR, vicinity of Kutinskaya Sopka hill, wet hillocked grassy-sedge meadow, 2 ad females; 08/13/1998.

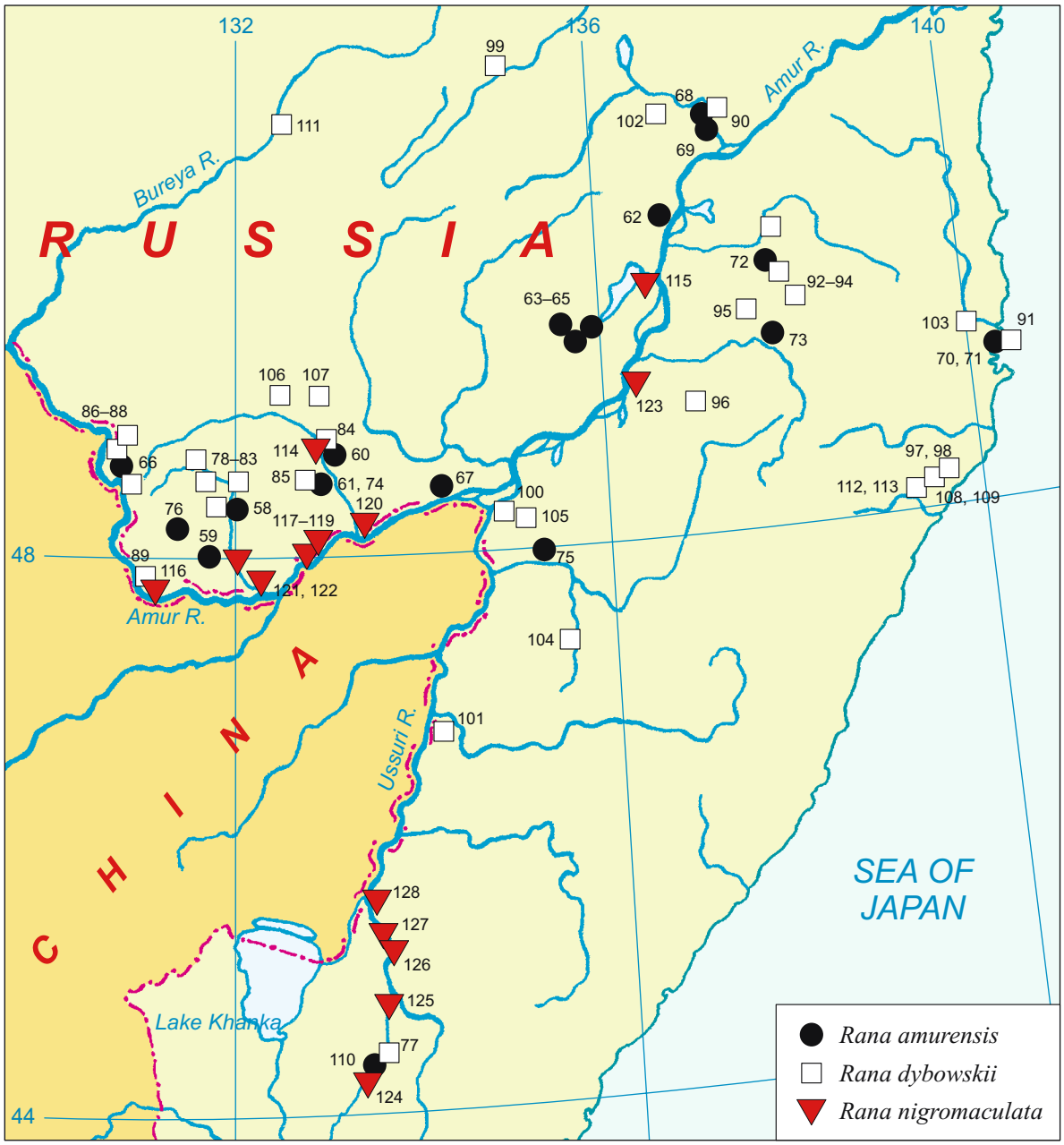

Fig. 3. Distribution of *Rana amurensis*, *R. dybowskii*, and *R. nigromaculata* in the Russian Far East.

82. YeAO, LR, Bidzhan R. valley, Utura R. mouth, 3 sad, 3 ad females; 08/20/1998.

83. YeAO, LR, Bidzhan R. valley, a small isle ~1 km lower of Kozulikha R. mouth, 1 ad male; 08/22/1998.

84. YeAO, BrR, Bira R. valley, Krasnyy Vostok surrounds, 4 juv, 2 ad females, 2 males; 08/29/1998.

85. YeAO, BrR, south-east foots of Ul'dura Ridge, waste quarry, edge of oak forest, 2 juv; 08/30/1998.

86. YeAO, ObR, Amur R. valley near Srednyaya R. mouth (~4 km downstream of Radde), edge of mixed coniferous-broad-leaved forest, 1 sad; 07/16/1999.

87. YeAO, ObR, vicinity of Radde, Lagar R. valley, mixed coniferous and broad-leaved forest, 1 ad female; 07/17/1999.

88. YeAO, ObR, lower Pompeyevka R., broad-leaved forest with coniferous trees, 8 sad, 6 ad males, 7 ad females; 07/17/1999. All frogs were noted at deep night time (since 2300 to 0100) at the river bank.

89. YeAO, OkR, vicinity of Yekaterino-Nikol'-skoye, Amur R. bank, Medvezhiy Utes foot, 2 sad; 07/20/1999.

90. KhK, KR, Komsomol'skiy SNR, Gorin R. valley, Tikhaya point, 3 juv; 07/18/2000.

91. KhK, VaR, Tatarskiy Proliv coast, marshy bank of Lake Toki (~12 km to north east of Vanino), 7 juv, 1 sad; 07/28/2001.

92. KhK, KR, Gur R. valley, ~12 km to south of Snezhnyy, mixed coniferous-deciduous forest, clutches and larvae at 28 – 32 stages in road ditches; 05/14 – 15/2002.

93. KhK, Gur R. basin, Yuli R. valley, secondary fir-deciduous forest, ditches along waste timber carrying road, clutches, larvae at 32 – 37 stages, 1 sad, 3 ad females; 05/16 – 17/2002.

94. KhK, KR, Gur R. basin, Medvezh'ya Pad' R. valley (tributary of Khoso R.), fir-birch forest, 1 ad female; 05/18/2002.

95. KhK, NaR, eastern slope of Khodzyal Ridge (Anuy R. basin), mixed coniferous-broad-leaved forest, a small creek valley, 1 ad female; 05/21/2002.

96. KhK, NaR, Lake Gassi basin, middle Kartanga R. (tributary of Khar R.), mixed coniferous-broad-leaved forest, edge of forest road, 1 ad male; 05/24/2002.

97. KhK, SGR, Botchinskiy SNR, Botchi R. basin, upper Mul'pa R. valley, larch-fir forest, 10 juv, 2 sad, 1 ad female; 07/17/2002.

98. KhK, SGR, Botchinskiy SNR, Botchi R. basin, Mul'pa R. valley, wet larch-fir forest with birches and aspen trees, ~70 individuals (SVL ~22 – 55 mm) during 30 km route; 07/18 – 22/2002.

99. KhK, SR, Amgun' R. valley, vicinity of railway station Éanga, secondary birch and larch forest, 1 ad female; 09/15/2002. According to interrogated data, frogs are common in that area.

100. KhK, KhR, vicinity of Bychikha, Bol'shekhekhtsirskiy SNR, interstream area between Bykova and Polovinka rivers, mixed coniferos-broad-leaved forest, 7 clutches, 3 ad males; 05/03 – 04/2003.

101. KhK, BR, middle Samur R. (tributary of Bikin R.), valley broad-leaved forest, clutches, 1 sad, 11 ad males, 2 ad females; 05/18 – 21/2003.

102. KhK, SR, Khurmulinskaya Mar' (~8 km to the north-east of Khurmuli village), birch-larch forest with deciduous trees, 4 individuals; 08/05/2003 (A. G. Roslyakov, 2003: personal communication).

103. KhK, VaR, Tumnin R. basin, vicinity of Us'-ka-Orochskaya, lower Khudyami R. valley (~4 km upstream of river mouth), regenerating burnt-out and cut-out forest, ~10 individuals; 08/16 – 18/2003 (A. G. Roslyakov, 2003: personal communication).

104. KhK, LaR, Khor R. basin, Kamen' R. valley (tributary of Matay R.), lower Oktyabr'skiy creek, marshy light larch forest, ~15 individuals; 09/02/2003 (A. G. Roslyakov, 2003: personal communication). All frogs migrate to north and north east towards lower Kamen' R. and Matay R. valley. Perhaps, there are prehibernating movements.

105. KhK, KhR, vicinity of Korfovskiy, slope of a mount, edge of mixed coniferous and broad-leaved forest, juv (SVL ~15 – 20 mm); 09/05/2003 (A. G. Roslyakov, 2003: personal communication).

106. YeAO, ObR, Bastak SNR, Bira R. basin, upper Ikura R. valley, mixed coniferous-broad-leaved forest, in pools aside waste road with total surface ~800 m^2 were 374 clutches at 2 – 8 stages, 9 ad males (vocalization); 05/02/2004.

107. YeAO, ObR, Bastak SNR, In R.. basin, middle Bastak R., marshy light larch forest, in pools with total surface ~400 m^2 were 138 clutches, tadpoles at 24 – 27 stages, 6 ad females and 6 ad males (amplexus); 05/06/2004.

108. KhK, SGR, Botchinskiy SNR, Botchi R. basin, upper Mul'pa R. valley, birch-larch forest, ~450 egg clutches at 9 km route at 2 – 28 stages, larvae at 29 – 31 stages, 7 ad males (vocalized); 05/20 – 27/2004.

109. KhK, SGR, Botchinskiy SNR, Botchi R. basin, lower Mul'pa R. valley, poplar-*Chosenia* forest, 3 sad, 2 ad males, 4 ad females; 07/22 – 24/2004.

110. PK, YaR, vicinity of Yablonovka, Arsen'yevka R. bank, bushy grass meadow, 1 ad male; 08/18/2004.

111. KhK, VBR, vicinity of Ust'-Urgal, left bank of Bureya R., birch, spruce and larch forest, 16 juv, 3 sad, 4 ad males, 1 ad female; 09/08 – 12/2004. At temporary warm-up at 12.09.2004 (air temperature grows up to +24°C) 2 or 3 males were vocalized.

112. KhK, SGR, Botchinskiy SNR, Botchi R. basin, middle Mul'pa R. valley near Vasil'yev R., birch and dark-coniferous forest, a small mossy bog, larvae at 38 – 43 stages; 09/25/2004.

113. KhK, SGR, Botchinskiy SNR, Botchi R. basin, bank of middle Mul'pa R. near Stepanov R. mouth, birch and larch forest, 1 juv (SVL ~20 mm); 09/26/2004.

***Rana nigromaculata* Hallowell, 1861** (Fig. 3)

114. YeAO, BrR, outskirts of Krasnyy Vostok, water-filled gravel quarry, 4 juv, 1 sad, 1 ad female, 3 ad males; 08/29/1998.

115. KhK, AR, east of Lake Bolon' (~2 km of Cape Nergul' to south east), meadow on the edge of birch-aspen forest, small pond beside main lake, calls of single males; 05/24/1999.

116. YeAO, OkR, outskirts of Yekaterino-Nikol'skoye, Amur R. bank, 1 ad male; 07/20/1999.

117. YeAO, LR, vicinity of Dezhnevo, Amur R. flood-plain near Bidzhan R. mouth, meadow, 2 ad females; 07/23/1999.

118. YeAO, LR, ~18 km to south-west of Leninskoye, Amur R. flood-plain, Sredniy Is., meadow, 2 ad males, 5 ad females; 07/24/1999.

119. YeAO, LR, Amur R. flood-plain, Vertoprashikha bay (~7 km to east of Leninskoye), bushy meadow, 1 ad male; 07/26/1999.

120. YeAO, SmR, Amur R. flood-plain near Bira R. mouth, a small island, bushy meadow, 2 juv, 4 sad; 07/28/1999.

121. YeAO, LR, Bidzhan R. flood-plain, Makarshin bay, 1 sad; 08/23/2000.

122. YeAO, LR, vicinity of Kvashnino, Bidzhan R. flood-plain, bushy bank of river, 2 ad males; 07/02/2001.

123. KhK, NaR, outskirts of Dubovyy Mys, wet meadow, 2 ad males; 08/27/2001.

124. PK, YaR, vicinity of Pokrovka, lower Arsen'yevka R. valley, ash-elm forest, 1 juv (SVL ~35 mm); 08/16/2004.

125. PK, YaR, vicinity of Bel'tsovo, left bank of lower Arsen'yevka R., 2 ad (SVL ~65 – 70 mm); 08/20 – 21/2004.

126. PK, KiR, Ussuri R., Sakhalin[2] island, right bank, 1 juv (SVL ~30 mm); 08/24/2004.

127. PK, LZR, vicinity of Glazovka, right stony bank, 3 juv, 3 sad, 6 ad; 08/26/2004. Frogs were active at twilight and early night time.

128. PK, LZR, outskirts of Ruzhino, right bank of Ussuri R., pasture, 2 sad (SVL ~45 – 50 mm); 08/28/2004.

[2] The toponyme "Sakhalin" is abbreviated and distorted of old Manchurian "Saghalien Anga Hata," which means "An Island near a Black River Mouth." Maack (1859: 138) writes that vernacular people called "upper Amur R." (upstream of Ussuri R. mouth) as Sakhalian ("Black, or dark Water"). Despite the re-names during the last 150 years, there are at least four islands in the flood-plain of Lower Amur River and its tributaries are named Sakhalin.

REPTILES

***Pelodiscus sinensis* (Wiegmann, 1834)** (Fig. 4)

129. YeAO, LR, Bidzhan R. flood-plain, numerous traces, egg clutches, 21 juv (hatchlings), 1 ad male; 08/21 – 27/1998. Turtles and signs of their activity were noted continuously in observed part of the Bidzhan R. from Kozulikha R. mouth (a tributary of Bidzhan R.) downstream to Bidzhan village (~50 km of river bed). Observations were continued in 1999 – 2004.

130. YeAO, LR, vicinity of Dezhnevo, lower Bidzhan R., tracks 8 – 11 cm wide on sandy bars; 07/24/1999.

131. KhK, NaR, Lake Gassi, Cape Osinovyy, 1 ad female (L 132 mm); 08/24/2001. Live turtle was confiscated from local teens. Also it was found a carapace (L ~185 mm) of killed turtle in the willow bushes beside the lake shore.

132. KhK, NaR, Gassinskaya arm, ~5 km downstream of Dubovyy Mys, egg shell, numerous digs of raccoon dogs over clutches of turtles; 08/25 – 27/2001. Observations of "Lower Amur" ("Gassi") population of *Pelodiscus sinensis* were continued in 2003.

133. KhK, KhR, Bol'shekhekhtsirskiy SNR, right bank of Ussuri R. ~1 km downstream of Chirka R. mouth, 2 clutches, digged out by rain-waters; 08/30/2002 (K. N. Tkachenko, 2003: personal communication).

134. YeAO, LR, Bidzhan R. valley (from Novotroitskoye downstream to Dezhnevo, approximately 110 km), tracks 8 – 20 cm wide, 91 egg clutches, 1 juv (L ~60 mm), 4 ad females (L 243, 260, ~230 and ~180 mm); 06/18 – 29/2004.

135. PK, YaR, KiR, LZR, Arsen'yevka and Ussuri rivers (from Yakovlevka downstream to Lesozavodsk, ~140 km); tracks 11 – 22 cm wide, 26 egg clutches (24 of them were destroyed by predators), 2 juv (hatchlings), 1 juv (L ~70 mm), 1 ad male (L 283 mm), 3 ad (L ~180 – 230 mm); 08/16 – 28/2004.

***Zootoca vivipara* Jacquin, 1787** (Fig. 5)

136. KhK, NaR, vicinity of Slavyanka, right bank of Amur R., shore of Gionskiy bay, edge of mixed coniferous broad-leaved forest, 2 individuals; 04/26/1998 (M. V. Kryukova, 1998: personal communication).

137. KhK, AR, northern outskirts of Amursk Town, waste area, 1 ad male; 05/16/1999.

138. KhK, AR, south shore of Lake Bolon' (~15 km to south-east of Dzhuen), edge of aspen-oak forest, 3 individuals; 05/18/1999.

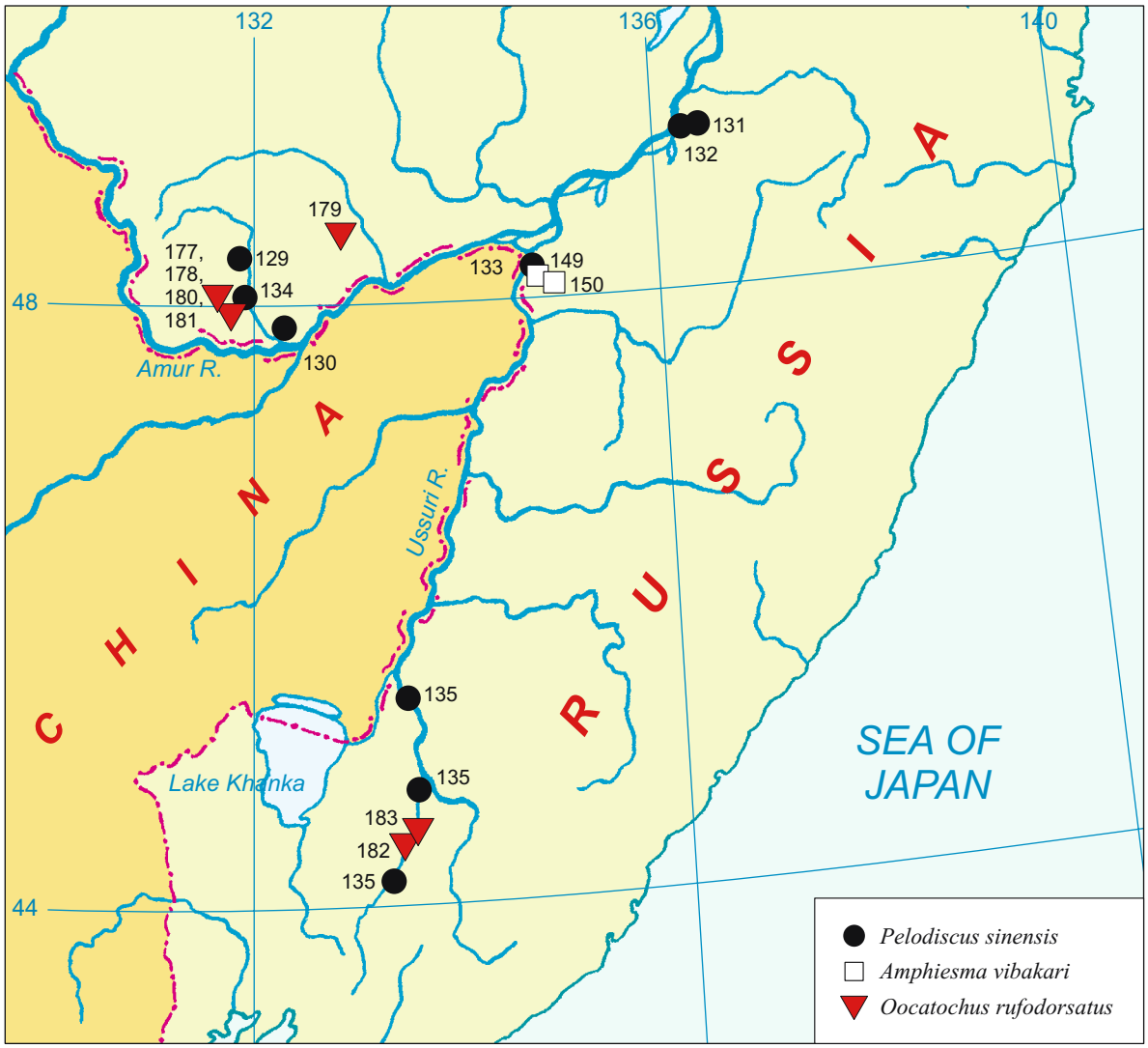

Fig. 4. Distribution of *Pelodiscus sinensis*, *Amphiesma vibakari*, and *Oocatochus rufodorsatus* in the Russian Far East.

139. KhK, VaR, Tatarskiy Proliv shore, Toki Bay (~12 km to north-east of Vanino), grassy edge of light birch-larch forest, 3 ad females; 07/26/2001.

140. KhK, KR, Gur R. Valley, ~12 km southwards of Snezhnyy, edge of mixed coniferous-deciduous forest, 1 ad male, 2 ad females; 05/14 – 15/2002.

141. KhK, KR, Gur R. basin, Medvezh'ya Pad' R. valley (tributary of Khoso R.), fir-birch forest, 1 ad female; 05/18/2002.

142. KhK, KR, Gur R. basin, upper Chermal R. valley, mixed coniferous-broad-leaved forest, 1 ad female; 05/21/2002.

143. KhK, KR, Lake Innokent'yevskoye basin, upper Khoydur R., deciduous forest, 1 ad female; 05/21/2002.

144. KhK, SGR, Botchinskiy SNR, Botchi R. basin, upper Mul'pa R. valley, larch-fir forest, 3 ad females; 07/17/2002. All lizards were gravid.

145. KhK, TChR, Sea of Okhotsk coast, south shore of Ul'banskiy Bay, vicinity of Ul'ban R. mouth, common species in the coastal marshy plains; August 2003 (M. F. Valiakhmetov, 2003: personal communication).

146. KhK, VaR, Tumnin R. basin, vicinity of Us'-ka-Orochskaya, lower Khudyami R. valley (~4 km upstream of river mouth), regenerating burnt-out and cut-out forest, 5 ad individuals; 08/16 – 18/2003 (A. G. Roslyakov, 2003: personal communication).

147. KhK, SGR, Botchinskiy SNR, Botchi R. basin, upper Mul'pa R. valley, edge of birch and larch for-

Fig. 5. Distribution of *Zootoca vivipara* and *Vipera sachalinensis* in the Russian Far East.

est near Solonchakovyy R. mouth, 1 ad male; 05/24/2004.

148. KhK, SGR, Botchinskiy SNR, Botchi R. basin, lower Mul'pa R., edge of birch and larch forest near Osinovyy R. mouth, 1 ad male, 1 gravid female; 07/22/2004.

***Amphiesma vibakari* (Boie, 1826)** (Fig. 4)

149. KhK, KhR, Bol'shekhekhtsirskiy SNR, Chirki point, edge of broad-leaved forest, 1 ad male; 07/09/2003. The snake was found in the same place as in 1991 (Adnagulov et al., 2000, location 183).

Fig. 6. Distribution of *Elaphe schrenckii* and *E. dione* in the Russian Far East.

150. KhK, KhR, Bol'shekhekhtsirskiy SNR, lower Tsypa R. (tributary of Chirki R.), broad-leaved forest, 1 sad (total length ~200 mm); 07/15/2003 (K. N. Tkachenko, 2003: personal communication). This findings point is aparted ~14 km to south east of the previous locations.

***Elaphe dione* (Pallas, 1773)** (Fig. 6)

151. YeAO, ObR, vicinity of Teplyye Klyuchi, Bidzhan R. valley, mixed coniferous broad-leaved forest, 1 ad male flattened by vehicle wheels; 08/14/1998.

152. YeAO, ObR, vicinity of Teplyye Klyuchi, mixed coniferous broad-leaved forest, bridge across Bidzhan R., 1 ad male; 08/15/1998.

153. YeAO, LR, outskirts of Novotroitskoye, single hill, edge of bushy oak forest, 4 juv, 1 sad; 08/22/1998.

154. YeAO, BrR, south-east foot of Ul'dura Ridge, waste quarry, edge of oak forest, 1 juv, 1 ad female; 08/30/1998.

155. YeAO, ObR, vicinity of Radde, Lagar R. valley, mixed coniferous and broad-leaved forest, waste apiary, slough skin; 07/17/1999.

156. YeAO, OkR, vicinity of Yekaterino-Nikol'skoye, Amur R. bank, Medvezhiy Utes foot, slough skin; 07/20/1999.

157. KhK, KR, Komsomol'skiy SNR, Gorin R. valley, Zolotoy creek mouth, deciduous forest, 2 ad males, 3 ad females; 07/20 – 21/2000.

158. KhK, KR, Komsomol'skiy SNR, Gorin R. valley, surrounds of Siutaru R., valley deciduous forest, slough skin; 07/22/2000.

159. KhK, KR, Komsomol'skiy SNR, Gorin R. valley, Cape Pervyy Byk, stony slope, 1 ad male; 07/22/2000.

160. KhK, KR, Komsomol'skiy SNR, Gorin R. mouth, Bichi point, 3 ad males, 7 ad females; 07/23 – 24/2000. Six females were gravid.

161. KhK, KR, Komsomol'skiy SNR, Amur R. flood-plain, Prokop point, 2 ad males; 07/27/2000. Both snakes were noted near sheds.

162. KhK, KR, Gur R. basin, Yuli R. valley, secondary fir-deciduous forest, edge of waste timber carrying road, 1 ad male; 05/17/2002.

163. KhK, NaR, Anuy R. basin, upper Bolé R. valley (tributary of Manoma R.), deciduous forest, waste timber cutting place, 2 ad males; 05/20/2002.

164. KhK, NaR, Anuy R. basin, eastern slope of Khodzyal Ridge, mixed coniferous-broad-leaved forest, 1 ad female; 05/21/2002.

165. KhK, NaR, Lake Dzhalunskoe basin, upper Kholmistaya R. (tributary of Nyura R.), deciduous forest, edge of forest road, 1 ad male; 05/21/2002.

166. KhK, NaR, Lake Gassi basin, middle Kartanga R. (tributary of Khar R.), mixed coniferous-deciduous forest, edge of timber carrying road, 1 ad male; 05/24/2002.

167. KhK, SGR, Botchinskiy SNR, Botchi R. basin, upper Mul'pa R. valley, larch-fir forest, slough skin; 07/17/2002.

168. YeAO, ObR, Bidzhan R. basin, upper Sredniy Taimen' R. valley, mixed coniferous-broad-leaved forest; 1 ad male (L ~680 mm); 08/07/2002.

169. KhK, KhR, vicinity of Korfovskiy, slope of a mount, edge of mixed coniferous and broad-leaved forest, 2 ad individuals (L ~400 – 500 mm); 09/05/2003 (A. G. Roslyakov, 2003: personal communication).

170. YeAO, ObR, Bastak SNR, Bira R. basin, upper Ikura R. valley, edge of mixed coniferous-broad-leaved forest, sheds, 12 ad females, 5 ad males; 06/17/2004.

***Elaphe schrenckii* (Strauch, 1873)** (Fig. 6)

171. YeAO, LR, Leninskoye, 1 ad female (L ~1300 mm); 07/26/1999. The snake was killed by local people.

172. YeAO, BrR, south-east foot of Ul'dura Ridge, waste quarry, edge of oak forest, 1 ad male; 06/08/2002.

173. KhK, KhR, vicinity of Korfovskiy, slope of a mount, edge of mixed coniferous and broad-leaved forest, 1 sad (L ~700 mm); 09/05/2003 (A. G. Roslyakov, 2003: personal communication).

174. PK, YaR, vicinity of Ozernoye, left bank of lower Arsen'yevka R., valley elm and ash forest, 1 ad male (L ~1050 mm); 08/20/2004. The snake crossed the river.

175. PK, YaR, vicinity of Bel'tsovo, Bel'tsovskiye Sopki Ridge, cedar pine, oak and linden forest, stony slope (~500 m a.s.l.), 1 ad female (L ~1300 mm), 1 sad male (L ~755 mm); 08/21/2004.

176. PK, KiR, right bank of Ussuri R., outskirts of Podgornoye, broad-leaved forest, 2 juv (SVL + TL, 330 + 55 and 325 + 58 mm); 08/23/2004.

***Oocatochus rufodorsatus* (Cantor, 1842)** (Fig. 4)

177. YeAO, LR, vicinity of Bidzhan, Zmeinyy Utes, 3 juv, 2 ad gravid females, 7 slough skins; 08/24 – 25/1998.

178. YeAO, LR, outskirts of Bidzhan, edge of birch oak forest, 2 ad males; 08/27/1998.

179. YeAO, BrR, south-east foot of Ul'dura Ridge, waste quarry, edge of oak forest, 3 juv. (flattened by vehicle wheels), 2 sad, 1 ad male, 2 ad females; 08/30/1998. Two adult snakes were found copulating.

180. YeAO, LR, vicinity of Bidzhan, Zmeinyy Utes surrounds, 2 ad males, 7 slough skins; 08/19/2000.

181. YeAO, LR, vicinity of Bidzhan, Zmeinyy Utes, grassy-wormwood meadow, 2 sad male; 06/21/2002.

182. PK, YaR, vicinity of Yablonovka, lower Arsen'yevka R. valley, bushy grass meadow; 1 juv (L ~250 mm); 08/17/2004.

183. PK, YaR, Arsen'yevka R. valley, near Zabluzhdeniya R. mouth, 1 ad male (L ~400 mm); 08/20/2004. The snake crossed the river.

Fig. 7. Distribution of *Gloydius intermedius* and *G. ussuriensis* in the Russian Far East.

***Gloydius intermedius* (Strauch, 1868)** (Fig. 7)

184. YeAO, ObR, vicinity of Teplyye Klyuchi, Bidzhan R. valley, mixed coniferous-deciduous forest, stony slope of hill near bridge across Bidzhan R., 1 ad female; 08/15/1998.

185. YeAO, ObR, vicinity of Teplyye Klyuchi, 3rd Safronikha R. mouth (tributary of Bidzhan R.), mixed coniferous-deciduous forest, stony slope of a hill, 2 ad females; 08/16/1998.

186. YeAO, ObR, lower of Pompeyevka R., broad-leaved forest with coniferous trees, 1 ad male; 07/18/1999. Snake was met at deep night time (close 01.00) at the river bank.

187. YeAO, ObR, Bidzhan R. basin, upper Sredniy Taimen' R. valley, mixed coniferous-broad-leaved forest; 1 ad female (L ~630 mm); 08/07/2002.

188. KhK, LaR, Khor R. basin, lower Sagdy-Selanka R. (tributary of Kafe R.), mixed coniferous-birch forest, south-east stony slope, ~600 m a.s.l., 1 ad, slough skin of ad snake; 06/10/2003 (T. N. Tolmacheva, 2003: personal communication).

189. PK, YaR, vicinity of Bel'tsovo, Bel'tsovskiye Sopki Ridge, close to top of Lysaya Mt., cedar pine, oak

and linden forest, stony slope (~800 m a.s.l.), 1 ad female and 1 ad male (L ~650 and 680 mm, respectively); 08/21/2004. Snakes were found copulating.

190. Pt., YaR, Arsen'yevka R. mouth (confluence with Ussuri R.), 1 ad (L ~500 mm); 08/23/2004. The snake was crossing the river.

***Gloydius ussuriensis* (Emelianov, 1929)** (Fig. 7)

191. YeAO, ObR, vicinity of Teplyye Klyuchi, mixed coniferous broad-leaved forest, bridge across Bidzhan R., 2 ad females, slough skins between logs; 08/13 – 16/1998.

192. YeAO, LR, vicinity of Bidzhan, Zmeinyy Utes, 2 juv, 1 ad female, 3 ad males; 08/24 – 25/1998.

193. YeAO, LR, outskirts of Bidzhan village, bushy waste grounds, 1 ad male; 08/27/1998.

194. YeAO, ObR, lower Pompeyevka R., broad-leaved forest with coniferous trees, 1 ad female; 07/18/1999. Snake was met late at night (close 01.00) at the river bank.

195. KhK, KR, Komsomol'skiy SNR, Gorin R. valley, Bichi point (mouth of Gorin R.), 1 ad male; 07/22/2000.

196. KhK, KR, Gur R. basin, Yuli R. valley, secondary fir-deciduous forest, edge of waste timber carrying road, 1 sad; 05/16/2002.

197. KhK, NaR, Lake Gassi basin, lower Kartanga R. (Khar R. tributary), mixed coniferous-deciduous forest, bank of a water-filled gravel quarry, 1 ad male; 06/24/2003.

198. YeAO, ObR, Bastak SNR, Bira R. basin, upper Ikura R. area, edge of mixed coniferous-broad-leaved forest, sheds, 2 ad females; 06/17/2004.

199. YeAO, LR, Bidzhan R. valley, ~6 km to North of Bidzhan village, 1 sad (L ~350 mm); 06/21/2004. The snake was crossing the river.

200. PK, YaR, vicinity of Ozernoye, left bank of lower Arsen'yevka R., 5 sad (L + Lcd ~350 – 400 mm), 1 ad (L ~500 mm); 08/20/2004. Four snakes were found on gravel-sand bar killed by local people. The fifth one was found in a shallow water near the shoreline. Another animal was noted ~1 km downstream crossing the river.

***Vipera sachalinensis* Tsarevsky, 1916** (Fig. 5)

201. KhK, VaR, Tatarskiy Proliv coast, Toki Bay (~12 km to north-east of Vanino), boundary of light birch-larch forest and sedge-mossy marsh, 3 ad females, 1 ad male; 07/26/2001.

202. KhK, KR, Gur R. Valley, ~12 km southwards of Snezhnyy, mixed coniferous-deciduous forest, 1 sad; 05/14/2002.

203. KhK, KR, Lake Innokent'yevskoye basin, upper Khoydur R., deciduous forest, 1 ad female, 1 ad male; 05/21/2002.

204. KhK, SGR, Botchinskiy SNR, Botchi R. basin, upper Mul'pa R. valley, larch-fir forest, 1 sad, 1 ad female; 07/17/2002.

205. KhK, TChR, Sea of Okhotsk coast, south shore of Ul'banskiy Bay, vicinity of Ul'ban R. mouth, common species in the coastal marshy plains; August 2003 (M. F. Valiakhmetov, 2003: personal communication).

206. KhK, SR, Khurmulinskaya Mar' (~11 km to the north-east of Khurmuli village), edge of marshy light larch forest, 2 juv (L 190 – 210 cm), 2 ad (L ~500 – 600 mm); 08/05/2003 (A. G. Roslyakov, 2003: personal communication). All noted snakes were found apart ~50 – 70 m from each other.

207. KhK, VaR, Tumnin R. basin, vicinity of Us'-ka-Orochskaya, lower Khudyami R. valley (~4 km upstream of river mouth), regenerating burnt-out and cut-out forest, 2 ad (L ~400 – 500 mm); 08/16 – 18/2003 (A. G. Roslyakov, 2003: personal communication).

208. KhK, SGR, Botchinskiy SNR, left bank in the middle Botchi R., valley poplar-*Chosenia* forest, 2 ad (L ~450 – 550 mm); 07/22 – 23/2004.

209. KhK, SGR, Botchinskiy SNR, Botchi R. basin, upper Mul'pa R. valley, birch and larch forest, 1 juv (L ~250 mm); 09/22/2004.

DISCUSSION

Geographical and climatic conditions in various parts of the RFE determine the distribution and ecology of amphibian and reptiles. Temperature and moisture (including precipitation) fluctuations influence amphibian number dynamics. There were very few rains in some areas of the RFE during last years. Hot and rainless periods in spring and summer (continuing up to 2 – 3 weeks) results in the decrease of many shallow water bodies, loss of eggs, larvae and mummification of amphibians. For instance, mummified frogs and toads were observed in the Middle Amur R. area in July 1999, which was hot (up to +30°C at night time) and rainless. The same situation was registered in Primorskiy Kray (Maslova, 2000).

Hot and dry weather shifts the diurnal activity to the night hours, which seems typical to amphibians and reptiles biology in the south of the RFE. In the summer months of 1999, 2003, and 2004 almost all animals were registered at the nighttime (mainly after 22.00).

Amphibian breeding activity also depends on the local geographical and climatic conditions. The spawning activity of *Rana dybowskii* in the Botchinskiy SNR (eastern slope of the Sikhote-Alin' Mountain Ridge) starts approximately 2 to 3 weeks later, than in the vicinity of Khabarovsk City. Although these localities are in the same latitude 48° N, Botchinskiy SNR is situated ~340 km eastwards from Khabarovsk (approximately 139° E and 135° E, respectively). Similar shifts are registered within Middle Amur Lowland. So, *Rana amurensis* starts to spawn in the late April – early May in the Khabarovsk surroundings, but it starts to breed 2 to 3 weeks later in the Bolonskiy SNR (~140 km north-eastwards from Khabarovsk). These differences are due to deeper freezing of the moist grounds and its prolonged melting in the Middle Amur Lowland.

Weather conditions in spring time (i.e., insolation, clouds, temperature dynamics, and air humidity) also influence the amphibian biology significantly. Relatively warm and rainy days in the second half of May 2002 resulted in early end of hibernation in the "Lower Anuy R." population of *Bombina orientalis* (calling males were registered at 24.05.2002, see. locality 38). But in the same time in 18 – 22.05.2003 another population in Lower Bikin R. (Adnagulov et al., 2000: locality 75) did not finish hibernation, although this population is located more southwards from the first one (~330 km). In the late June 2003 no *Bombina orientalis* was found in the middle Kartanga R. (Lower Anuy population). These activity shifts were because of cold and dry weather in May and June 2003 in the whole Priamur'ye area. Majority of ponds become too shallow or dry, and local people (employees of Gassinskoye forestry) say, that these amphibians are common in July and August, while warm and rainy weather lasts.

Studies of distribution and biology of *Pelodiscus sinensis* within Amur R. basin were conducted in 1998 through 2004. Some obtained data have been published (Adnagulov and Maslova, 2005), additional information will be published elsewhere.

New records of *Amphiesma vibakari* in the Bol'shekhekhtsirskiy SNR confirm the idea of a stable species population in that area (Adnagulov et al., 2000).

There are few records of copulation in some snake species (localities 173 and 189) in the late summer. These records confirm an opinion of Yu. M. Korotkov (1985) on the irregular (biennial or triennial) breeding cycles in some reptiles in the RFE south.

Some amphibian species have tolerance to the human activity and changes of nature. In the Gur R. basin *Hyla japonica* was registered only along forest roads (localities 49, 51, and 52), while the natural conditions (spruce and birch forests) are less comfortable to this species.

Human attitudes to snakes are different. There was some information during summer months of 2000 – 2004 that snakes were seen (mainly of *Elaphe schrenckii* and *Elaphe dione* within Khabarovsk City), up to 2 to 3 times per month. These were the reports of illegal captures of snakes in the wild, partly by petting, partly by illegal trade. Snakes escaped human apartments, and were seen in various parts of the city. People in the smaller settlements and villages kill snakes more often, and newly killed animals can be met in vicinities of different settlements. Usually, they are pit-vipers, *Gloydius* sp. and Dione racers, *Elaphe dione*.

Acknowledgments. We are very grateful to many people for their valuable information and various shared data, as well as co-operation in the field investigations. We sincerely thank for their assistance first of all Igor G. Tarasov (Regional State Department for Nature Conservation and Natural Sources "Oblkompripoda", Tomsk, Russia), and Mikhail F. Valiakhmetov (Khabarovsk Branch of TINRO Center, Khabarovsk), Anatoly G. Gubarets (Dubovyy Mys, NaR, KhK), Alexei A. Gulevich (Amgun' railway station, SR, KhK), Sergei F. Drozdov (Bastak SNR, Birobidzhan, YeAO), Maria V. Kryukova, Tatyana N. Tolmacheva, and Alexei G. Roslyakov (IWEP FEB RAS, Khabarovsk), Eugene V. Novomodnyi (Khabarovsk Kray Local Lore Museum, Khabarovsk), Konstantin N. Tkachenko (Bol'shekhekhtsirskiy SNR, Bychikha, KhK), and Mikhail N. Bazyl (State Department for Natural Resources of Primorskiy Territory, YaR, PK), too.

Also, we are very indebted to Tatiana N. Tolkachova for her assistance in translation of this paper into English.

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