

Remarks on the northeasternmost distribution of *Elgaria coerulea principis* Baird & Girard, 1852 (Squamata: Anguinae) in British Columbia

Markus Lambertz* & Kerstin Graba

Institut für Zoologie, Rheinische Friedrich-Wilhelms-Universität Bonn, Poppelsdorfer Schloss, D-53115 Bonn, Germany

* Corresponding author. E-mail: lambertz@uni-bonn.de

Abstract. Although the Northwestern Alligator Lizard (Squamata: Anguinae: *Elgaria coerulea principis*) is the most widespread lizard in British Columbia (Canada), its northeasternmost population seems to have been overseen in recent years. Based on own data and summarizing published and unpublished reports, we recognized this species from the city of Revelstoke and its southern and northeastern adjacent areas.

Key words. Anguinae, Canada, *Elgaria coerulea principis*, geographic distribution, Northwestern Alligator Lizard, Revelstoke.

Only four lizard species are known to occur in the Canadian province of British Columbia (BC). These are the three native ones, *Phrynosoma douglassii* (Bell, 1828) (Phrynosomatidae), *Plestiodon skiltonianus* Baird & Girard, 1852 (Scincidae), and *Elgaria coerulea* (Wiegmann, 1828) (Anguinae), as well as the invasive *Podarcis muralis* (Laurenti, 1768) (Lacertidae). Of these, *E. coerulea* is by far the most common and widespread lizard found in the province and is exclusively represented by its subspecies *E. c. principis* Baird & Girard, 1852, the Northwestern Alligator Lizard (Nussbaum et al. 1983; Matsuda et al. 2006). It can be distinguished from the other species inhabiting BC by its slender brownish body with rather inconspicuous dark markings and by a mid-lateral band of small scales between the larger dorsal and ventral scales (Matsuda et al. 2006). The diurnal alligator lizard is relatively small (snout-vent length usually less than 100 mm) and viviparous, life history traits commonly found in lizards at these latitudes in continental North America (Vitt 1973; Powell & Russell 2007).

While *E. c. principis* is the most widespread subspecies of *E. coerulea* and has its main distribution in BC and in the northwestern United States (Idaho, Montana, Oregon and Washington, extreme northern California), other subspecies range southwards to central California and Nevada (Smith 1946; Nussbaum et al. 1983). In BC, they are supposed to inhabit a narrow belt in the southern part of the province except for the very southeastern parts. Their northernmost occurrence has been reported from the area around Clearwater within central BC, and near Stuie in coastal BC, while the southeasternmost records are from Creston (Seburn & Brooks 2007).

On September 25, 2009 we observed a specimen of the Northwestern Alligator Lizard within the city limits of Revelstoke (Fig. 1). It was found in a backyard (400 Second Street West, Revelstoke, British Columbia, V0E 2S0,

Canada), approximately at 51°0'0.68" N, 118°11'56.01" W. The individual was observed, identified and photographed, but was not collected as no permit was available during the encounter.

According to the most recent comprehensive account of this species (Matsuda et al. 2006), the closest known occurrences, in relation to our present record, are those around Sicamous and Kaslo. These localities have already been mentioned by Van Denburgh (1922) and are approximately 60 km west and 130 km south of Revelstoke respectively (Fig. 2). Similarly, the official online database for BC reptiles (Anonymous 2011) gives an estimated range of *E. c. principis* that more or less matches the reference points provided by Matsuda et al. (2006) (Fig. 2). However, a much older account on the reptiles of the Northwest Pacific by Nussbaum et al. (1983) reports *E. c. principis* from around Revelstoke. Furthermore, an unpublished pamphlet distributed locally in that area (FMRG no year), indicates that *E. coerulea* is a year-round resident known from Mount Revelstoke Park and Glacier National Park. Both parks extend in total about 75 km further northeast than the city of Revelstoke. In this regard it may be worth mentioning that the FMRG list focuses exclusively on the area within the national parks. *Chrysemys picta* (Schneider, 1783) (Emydidae), for instance, is listed with the remark that it is not actually known from the parks themselves but is commonly only found along the Columbia River near Revelstoke. Another recent, but unfortunately again unpublished report by a local hydroelectric utility mentions specimens of *E. coerulea* from the eastern shore of the Arrow Lakes Reservoir which is located a few km south of the city of Revelstoke (Hawkes & Tuttle 2010).

As a consequence, the range of *E. c. principis* certainly reaches several kilometers more northeasternwards than it is currently assumed (Fig. 2). The fact that *E. c. prin-*



Fig. 1. The specimen of *Elgaria coerulea principis* (alive, not collected) encountered in Revelstoke (British Columbia, Canada) on September 25, 2009. Photograph: Kerstin Graba.

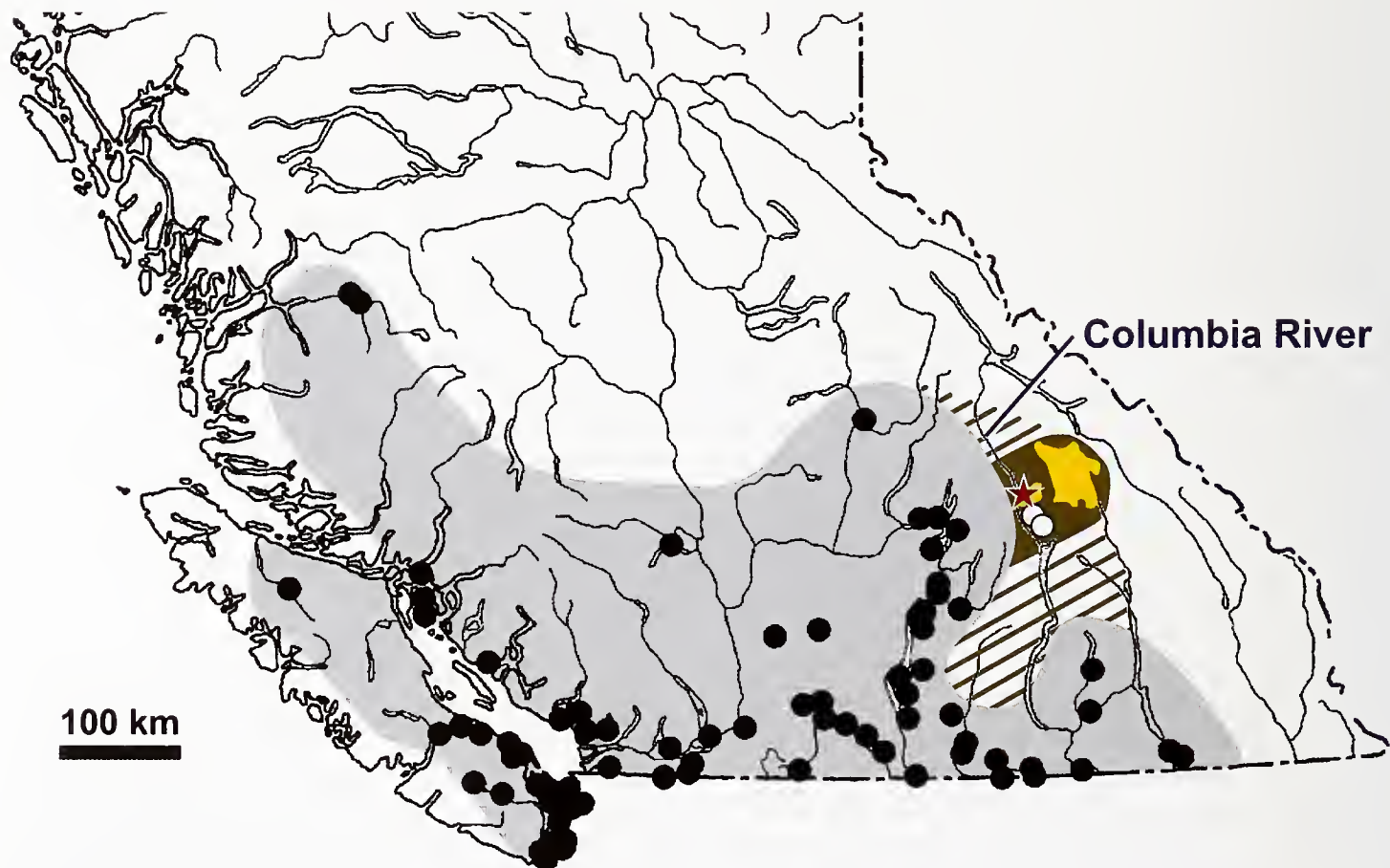


Fig. 2. Map of southern British Columbia (Canada) with known occurrences (black dots) of *Elgaria coerulea principis* (see Matsuda et al. 2006) and a recent estimation of its range (gray area, see Anonymous 2011). Note that the records from Revelstoke (red star, present report and from Nussbaum et al. 1983), those from Mount Revelstoke and Glacier National Parks (yellow area, FM-RG no year) and also those from the Arrow Lakes Reservoir (white circles, Hawkes & Tuttle 2010) are all located east of the Columbia River. The therefore confirmed range extension is indicated by the brown area and our hypothesized possible range extension is indicated by the brown hatched area.

cipis has been reported to be very sedentary, meaning that even roads (Rutherford & Gregory 2003) and small rivers (Stewart 1985) can act as effective barriers between populations, may have further implications: Revelstoke, both national parks and the localities where alligator lizards were found along the Arrow Lakes Reservoir are located on the eastern side of the Columbia River. The Columbia River is the largest river flowing to the Pacific in North America and in BC its main course flows almost in a straight line from Revelstoke south towards the United States (Stanford et al. 2010). Consequently, it probably represents an insurmountable barrier for these lizards. A possible scenario is that *E. c. principis* inhabits the areas along the eastern streambank of the Columbia River which are north of those near Kaslo, reaching at least Revelstoke and the two mentioned national parks in the North (Fig. 2). Another interesting fact is that the Illecillewaet River (in a more or less parallel and neighboring manner with the Trans-Canada Highway) flows from the northeast of Glacier National Park southwest until it reaches Revelstoke and joins the Columbia River (Mussio & Mussio 2011). Most of the area of Glacier and Mount Revelstoke National Parks, as well as the locality in Revelstoke in which we found the alligator lizard, are north relative to this potential Illecillewaet River barrier. The specimens from the Arrow Lakes Reservoir, however, were found south of it, making two distinct populations of the Northwestern Alligator Lizard at its northeasternmost range possible. However, more sampling and, ideally, studies on population genetics are urgently needed to test these latter hypotheses.

Acknowledgements. The “Fachgruppe Biologie” of the Rheinische Friedrich-Wilhelms-Universität Bonn provided financial support for the field trip to Western Canada. ML would like to cordially thank Steven F. Perry, Lukas Schreiber and Thomas Breuer (all from Bonn) for giving him the opportunity to become a co-organizer of this field trip. Heiko Schmied (Bonn) is further thanked for his comments on an earlier version of the manuscript.

REFERENCES

- Anonymous (2011) Alligator Lizard. In: The Reptiles of British Columbia (Thompson Rivers University, Kamloops, BC & British Columbia Ministry of Environment). Online at <http://www.bcreptiles.ca/lizards/alligator.htm> last accessed on July 12, 2011
- Baird SF, Girard C (1852) Descriptions of new species of Reptiles, collected by the U. S. Exploring Expedition under the command of Capt. Charles Wilkes, U. S. N. – First part. – Including the species from the Western coast of America. Proceedings of the Academy of Natural Sciences of Philadelphia 6: 174–177
- Bell T (1828) Description of a new Species of *Agama*, brought from the Columbia River by Mr. Douglass. Transactions of the Linnean Society of London 16: 105–107
- FMRG [Friends of Mt. Revelstoke & Glacier] (no year*) Wildlife Checklist Mount Revelstoke & Glacier National Parks. Natural History Handbook Number 2. Available from: Friends of Mt. Revelstoke & Glacier, 301-B, 3rd Street West, Box 2992, Revelstoke, BC, Canada, V0E 2S0. (*According to the Friends of Mt. Revelstoke and Glacier National Parks, Revelstoke, pers. comm. 2011, this checklist was produced in 1988)
- Hawkes VC, Tuttle KN (2010) Kinbasket and Arrow Lakes Reservoirs: Amphibian and Reptile Life History and Habitat Use Assessment. Annual Report – 2009. LGL Report EA3075. Unpublished report by LGL Limited environmental research associates, Sidney, BC, for BC Hydro Generations, Water License Requirements, Burnaby, BC
- Laurenti JN (1768) Specimen medicum, exhibens synopsis reptilium emendatam cum experimentis circa venena et antidota reptilium austracorum, quod autoritate et consensu. Joan Thomae, Vienna: 217 pp.
- Matsuda BM, Green DM, Gregory PT (2006) Amphibians and Reptiles of British Columbia. Royal BC Museum, Victoria: 266 pp.
- Mussio R, Mussio W (2011) Kootenay Rockies BC. 5th ed. Backroad Mapbooks, Coquitlam: 144 pp.
- Nussbaum RA, Brodie Jr ED, Storm RM (1983) Amphibians and Reptiles of the Pacific Northwest. University of Idaho Press, Moscow: 332 pp.
- Powell GL, Russel AP (2007) Life History Implications for Conservation and Monitoring of Lizards in Canada. Pp. 23–40 in: Seburn CNL, Bishop CA (eds.) Ecology, Conservation, and Status of Reptiles in Canada. Herpetological Conservation No. 2, Society for the Study of Amphibians and Reptiles, Salt Lake City
- Rutherford PL, Gregory PT (2003) Habitat Use and Movement Patterns of Northern Alligator Lizards (*Elgaria coerulea*) and Western Skinks (*Eumeces skiltonianus*) in Southeastern British Columbia. Journal of Herpetology 37: 98–106
- Schneider JG (1783) Allgemeine Naturgeschichte der Schildkröten nebst einem systematischen Verzeichnisse der einzelnen Arten und zwey Kupfern. Johan Gottfried Müllersche Buchhandlung, Leipzig: 364 pp.
- Seburn CNL, Brooks RJ (2007) Checklist and Status of Canadian Reptiles. Pp. 215–233 in: Seburn CNL, Bishop CA (eds.) Ecology, Conservation, and Status of Reptiles in Canada. Herpetological Conservation No. 2, Society for the Study of Amphibians and Reptiles, Salt Lake City
- Smith HM (1946) Handbook of Lizards – Lizards of the United States and Canada. Comstock Publishing Associates, Ithaca (NY): 557 pp.
- Stanford JA, Hauer FR, Gregory SV, Snyder EB (2010) Columbia River Basin. Pp. 258–283 in: Benke AC, Cushing CE (eds.): Field Guide to Rivers of North America. Academic Press, San Diego
- Stewart JR (1985) Growth and Survivorship in a California Population of *Gerrhonotus coeruleus*, with Comments on Intraspecific Variation in Adult Female Size. The American Midland Naturalist 113: 30–44
- Van Denburgh J (1922) The Reptiles of Western North America – An Account of the Species Known to Inhabit California and Oregon, Washington, Idaho, Utah, Nevada, Arizona, British Columbia, Sonora and Lower California. Volume 1: Lizards. Occasional Papers of the California Academy of Sciences 10: 1–611
- Vitt LJ (1973) Reproductive Biology of the Anguid Lizard, *Gerrhonotus coeruleus principis*. Herpetologica 29: 176–184
- Wiegmann AFA (1828) Beiträge zur Amphibienkunde. Isis (Oken) 21: 364–383

ZOBODAT - www.zobodat.at

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Bonn zoological Bulletin - früher Bonner Zoologische Beiträge.](#)

Jahr/Year: 2011

Band/Volume: [60](#)

Autor(en)/Author(s): Lambertz Markus, Graba Kerstin

Artikel/Article: [Remarks on the northeasternmost distribution of *Elgaria coerulea principis* Baird & Girard, 1852 \(Squamata: Anguidae\) in British Columbia 229-231](#)