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Cover: Indian Grey Wolf *Canis lupus pallipes* and Smooth-coated Otter *Lutrogale perspicillata* sharing the territory in Chambal basin. Digital art on Procreate by Aakanksha Komanduri.



defecating (Hetherington 1992; Stadler et al. 2016). Its movement in sand is characterized as 'fish-like', hence its name in English, as well as in numerous vernacular names (Stadler et al. 2016).

*Scincus scincus* is reportedly a dietary generalist (Attum et al. 2004, 2006; Kosma 2004; Salem et al. 2017), its diet including members of the orders Coleoptera, Araneae, Diptera, Orthoptera, and Lepidoptera (Attum et al. 2004). Additionally, seeds and vegetation have also been found in stomachs of the species, assumed to be intentionally consumed due to their high frequency of occurrence. The occurrence of *Acanthodactylus longipes*, a diurnal species of Lacertidae in a stomach sample of *S. scincus*, suggests opportunistic feeding of small vertebrates. Wind-blown detritus materials, such as seeds and dry leaves, have also been recorded in its diet (Attum et al. 2004).

In the present study, we observed structural features of dentition and attempted to correlate with the known feeding ecology of *S. scincus*. Two individuals of the lizard from the pet trade were examined, and were of unknown origin, although the nominotypical subspecies is the most commonly encountered in the pet trade, and reportedly originates from Egypt (Al-Johany et al. 2021).

## MATERIAL AND METHODS

Two specimens of adult *S. scincus* (UNIMAS 9812, 9813) were used for studying gross dental morphology. The specimens obtained from a commercial importer and euthanized using tricaine injection. Subsequently, they were decapitated, the cranium macerated and manually cleaned with commercial detergents for removal of skull muscles and tissues in the laboratory. Mandibles and maxillae were dehydrated using ethanol series and critically point dried (Das & Coe 1994) with Quotum™ K 850 Dryer (12 V dc), riveted to 4 mm aluminum stubs, platinum-coated using a Jeol™ JEC-3000FC autofine coater, set to auto function at 300 secs / 20 mA. The prepared samples were observed using field-emission scanning electron microscope (FE-SEM) (Jeol™ JSM-IT500) (Delgado et al. 2003).

Screen captures of key areas were saved as tiff files and edited using Photoshop 2024 (version 26.1). Voucher specimens were retained in the systematic collection of the Museum of the Institute of Biodiversity and Environmental Conservation, UNIMAS (UNIMAS 9812, 9813).

For nomenclatural conformity, we use cusps to refer to obtuse, rounded structures on occlusal surfaces of teeth of both jaws, ridges for striations on body of tooth ('crests' of Caputo 2004; 'apicobasal striations' of

Cernanský et al. 2019); and occlusal grooves ('sulcus' of Caputo 2004). Tooth counts were made on the left/right (L/R) sides of maxilla (including premaxillary and maxillary bones) and the mandible.

## RESULTS

Teeth were observed to be monostichous, bicuspid, sub-equal, sub-conical, and posteriorly-oriented, both mandibular and maxillary teeth showing weak ridges (Image 1). The occlusal surfaces were flat and rounded. maxillary tooth counts were 17/18, while mandibular counts were 16/17.

The maxillary teeth were oriented obliquely towards the oral cavity. Dental cusps were well defined, each tooth basally with weak longitudinal ridges (Image 1D). Anterior mandibular teeth exhibited recurved, pointed tips, as well as faint ridges (Image 1F), followed by sub-equal and sub-conical teeth in mesial and posterior mandible. Lingual aspect of both maxillary and mandibular teeth was characterized by flattened surfaces with indistinct ridges; whereas the labial aspect was smooth with absence of ridges or cusps. No diastema was observed in either maxillary or mandibular teeth rows. Apical tooth crown of maxillary and mandibular teeth comprised of flattened surfaces (characterized by a distinctly smooth appearance, rendered shiny due to platinum coating in the FE-SEM images). The resorption pits were primarily circular in shape.

## DISCUSSION

Our findings match the brief morphological description of *S. scincus* dentition by Kosma (2004), with teeth crowns being bicuspid, conical, consisting of constricted faint ridges on the lingual side. The bicuspid squamate tooth is considered an adaptation for grasping and manipulating prey, primarily insects (Townsend et al. 1999; Caputo 2004). The anterior teeth of mandible exhibited recurved tooth crowns, whereas mesial and posterior teeth were observed to be flattened and rounded, similar to *Scincella lateralis* (Townsend et al. 1999; see Image 1). Recurved teeth have been considered adaptative for rupturing slippery prey items such as earthworms in *Coeranoscincus reticulatus* (Greer 2007) which can be compared to the presence of larvae and pupae of Coleoptera in the diet of *S. scincus* (Attum et al. 2004; Kosma 2004). Unlike *S. lateralis* which exhibits both labial and lingual cusps, the latter was not observed in *S. scincus* (Townsend et al. 1999).

Blunt and flattened tooth crowns have been considered as an adaptation for either durophagy or omnivory (Townsend et al. 1999; Caputo 2004), and

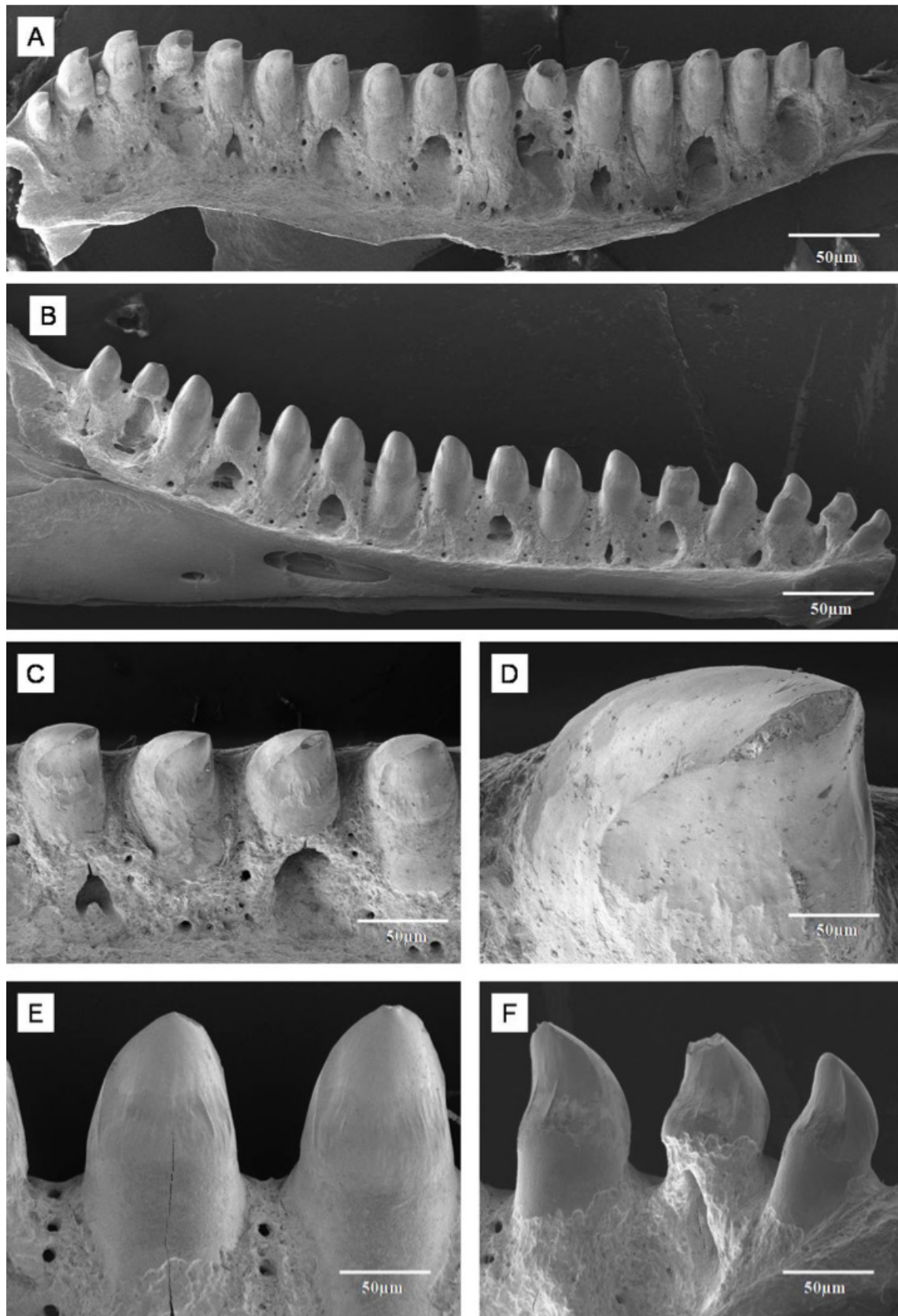


Image 1. Maxilla and mandible of *Scincus scincus* (UNIMAS 9812, 9813): A—Right maxilla | B—Right mandible | C—Maxillary teeth rows | D—Magnified (300x) image of maxillary teeth (dorso-lateral view) | E—Posterior mandibular teeth (row) | F—Magnified (100x) image of anterior mandibular teeth. © Shreya Bhattacharya and Indraneil Das.

are comparable to maxillary, mesial, and posterior mandibular teeth in *S. scincus*. The current species is known to feed on scorpions, coleopterans of genus *Phyllognathus*, *Pentodon*, and *Pimelia*, among others that possess strong exoskeleton (Attum et al. 2004; Kosma 2004). Vegetation, including flowers (*Genista saharae*) and seeds (*Aristida pungens*, *Retama raetam*, *Cyperus conglomeratus*) has also been recorded in its diet (Attum et al. 2004; Kosma 2004). It can be concluded that the dental morphology is adaptive for both durophagy and omnivory. *S. scincus* is opportunistically known to feed on *Acanthodactylus longipes*, a syntopic desert lizard (Attum et al. 2004). The anterior recurved, mandibular teeth, along with flattened, blunt maxillary teeth are suspected to serve as adaptations for capturing, holding, and processing large prey types. A similar dental pattern has been observed in the omnivorous *Varanus olivaceus*, which exhibits recurved conical mesial teeth, followed by blunted posterior teeth, possessing faint ridges (Melstrom 2017), features reminiscent of the non-familial species being reported.

Squamates can be considered as ideal study subjects for exploring relationships between dentition morphology and dietary patterns, as they exhibit diverse feeding preferences and variation in dentitional complexities (Christensen & Melstrom 2021). Research on squamate dentition is rare, compared to mammals and hence, there exists a considerable knowledge gap in understanding of dentitional morphology and function (Razmadze et al. 2024). The outcomes of the present study contribute to our understanding of dental adaptations and its potential functions.

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