

IDENTIFICATION OF MID-SIZE CAT SKULLS

Identification Guides for Wildlife Law Enforcement No. 7

Margaret “Cookie” E. Sims
National Fish and Wildlife Forensics Laboratory, 1490 E Main Street, Ashland, OR 97520
Email: cookie_sims@fws.gov

September 2005

Skulls of cats (Family Felidae) are often imported as souvenirs or trophies without provenance information. The purpose of this identification guide is to provide wildlife law enforcement officers with a how-to guide for distinguishing skulls of five species of mid-size cats commonly seen in wildlife trade. Skulls of cheetah, cougar, snow leopard, jaguar, and leopard are described in the next few pages of this guide. They are similar in size and might be confused when country of origin is unknown. Lion and tiger, the two largest cat species, and smaller cats can be ruled out most often by size alone (Figure 1).

The following pages describe and depict several distinguishing skull characters of mid-size cats including canine grooves, nasal profile, and frontal morphology. Metric rulers are included for scale. Figures 2 through 6 show basic skull shape and size, nasal profile, frontal morphology and canine tooth detail. **Species identification for probable cause can be made using the steps shown in Figure 7, along with the accompanying descriptions.**

Wildlife investigators are encouraged to send skulls to the Forensics Laboratory for definitive identification if a question arises during the investigation. For example, large adult male jaguar skulls (greatest length \geq 250 mm) may overlap in skull length with small female tiger or lion skulls. In these cases, a suite of skull characters are examined to finalize identification. The laboratory maintains a large comparative collection of specimens and published literature for identification purposes.



Figure 1. Largest two skulls: lion (top), tiger (bottom). Medium group at far left (top to bottom): cheetah, cougar, snow leopard, jaguar, leopard. Small group (left to right): domestic cat, bobcat, Canada lynx, caracal, clouded leopard



Figure 2. Cheetah (*Acinonyx jubatus*)

Skull relatively small and compact (greatest length: 162-203 mm). Rostrum (snout) very shortened, domed skull (see line detail) nasal profile straight to concave (dipped), small short canines, canine grooves absent or faint, broad frontal.

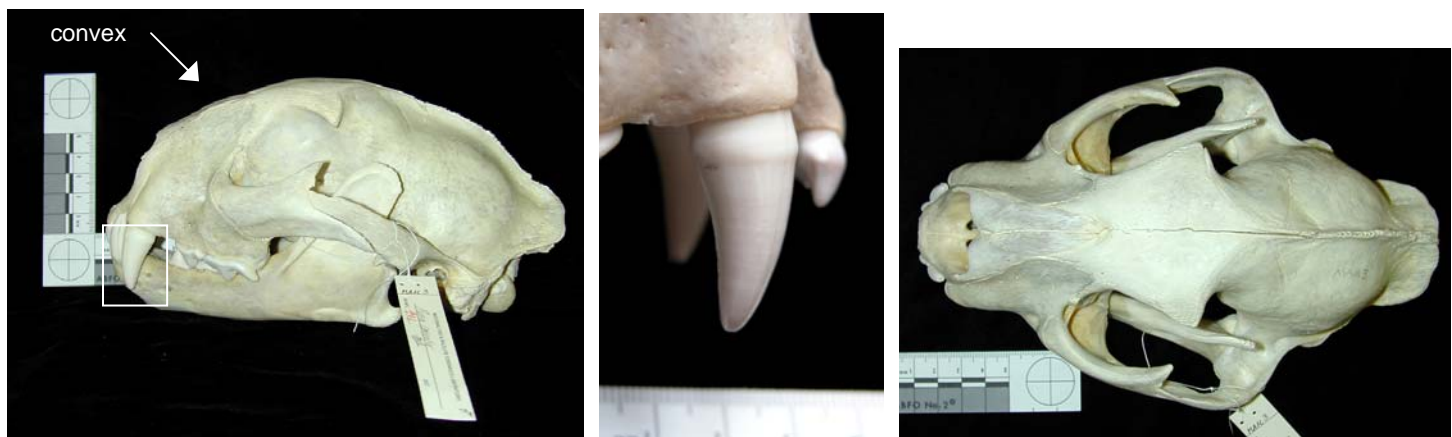


Figure 3. Cougar (*Puma concolor*)

Skull relatively small and rounded (greatest length: 158-237mm). Nasal profile convex, small conical canines with grooves absent or faint.

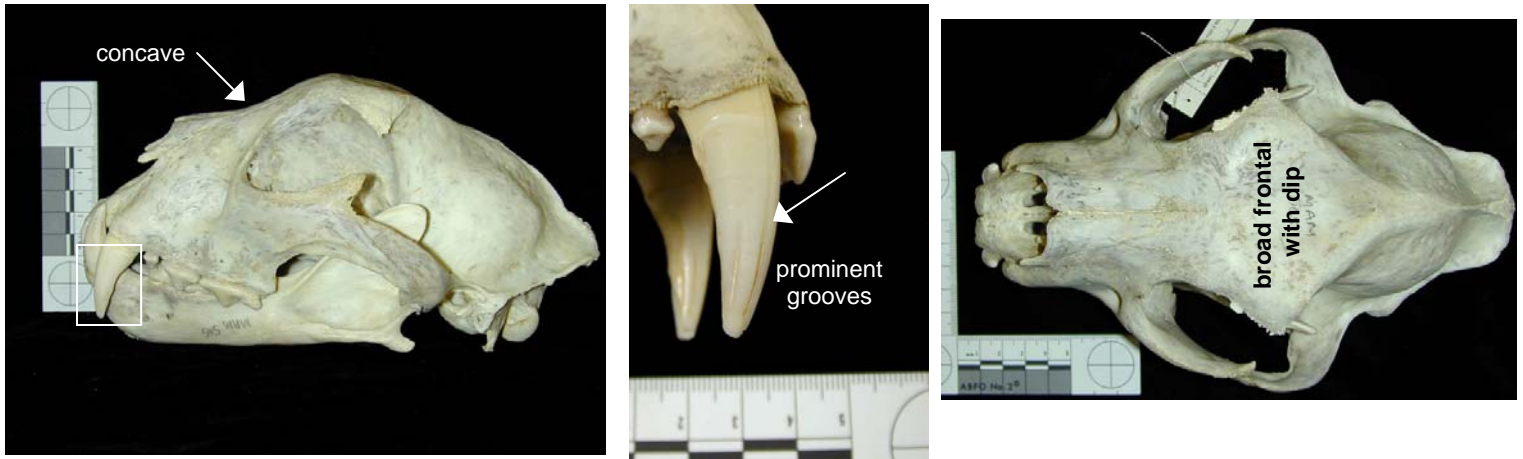


Figure 4. Snow leopard (*Uncia uncia*)
 Skull relatively small (greatest length: 165-200 mm). Nasal profile concave, elongate canines with grooves, broad frontal with dip.

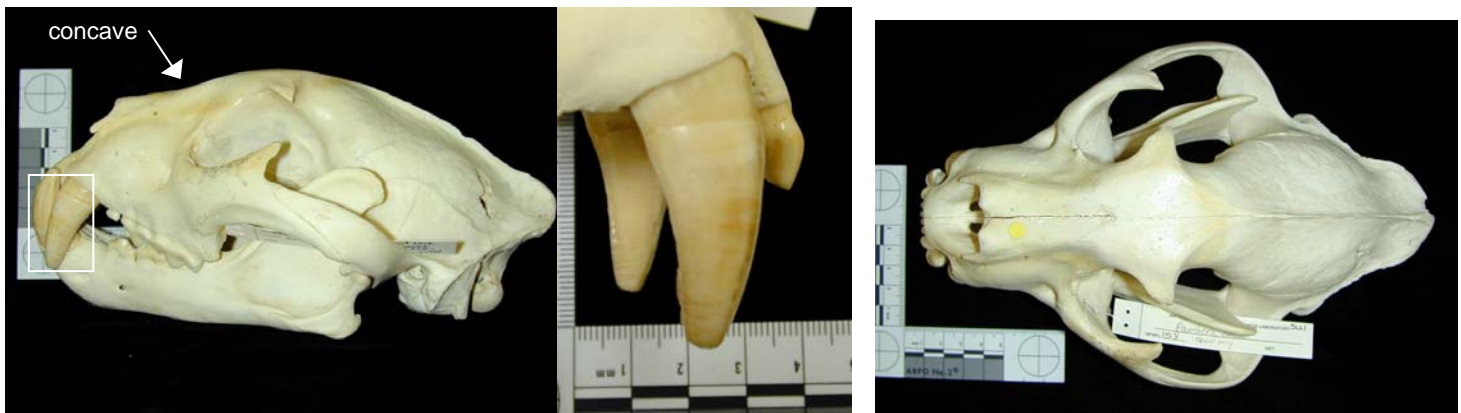


Figure 5. Jaguar (*Panthera onca*)
 Skull relatively large (greatest length: 204-302 mm). Nasal profile concave, large robust conical upper and lower canines (more circular than elliptical in cross-section) with large root structure, canine grooves absent or faint.

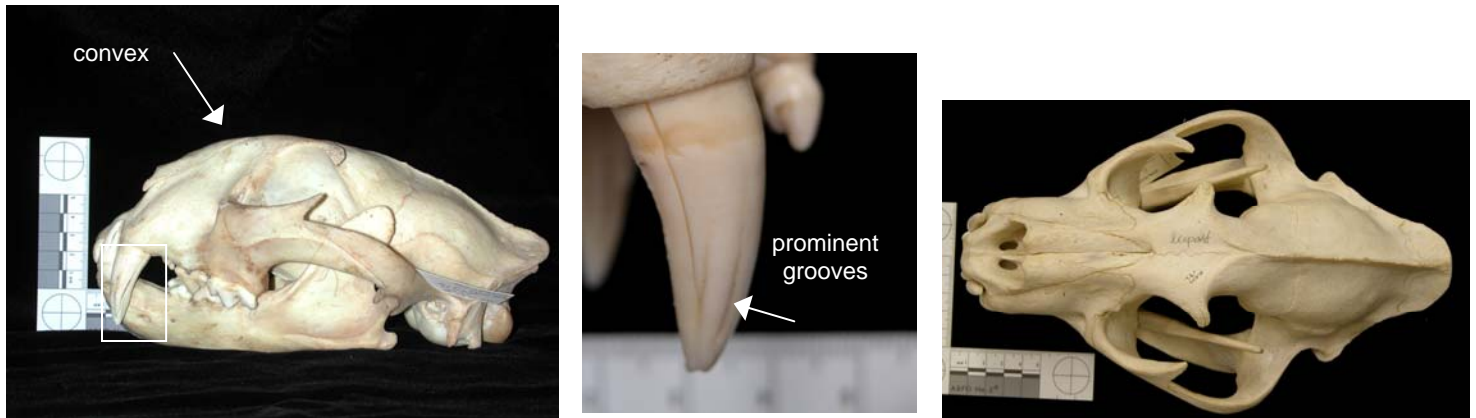


Figure 6. Leopard (*Panthera pardus*)

Skull sleek and elongate (greatest length: 170-273 mm). Nasal profile convex, elongate saber-like upper and lower canines, canine grooves prominent (often in pairs on inner and outer surface of tooth).

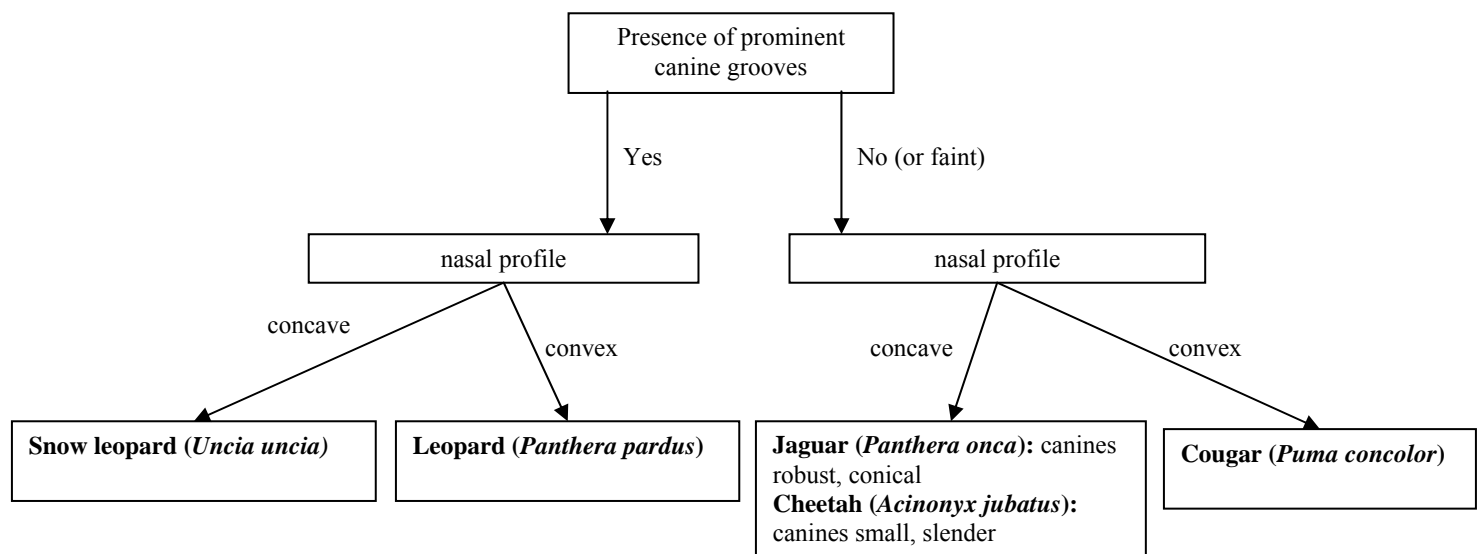


Figure 7. Steps to make a probable-cause identification, along with the accompanying skull descriptions.