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Inter-Observer Variation in Identifying Mammals from Their Tracks at Enclosed Track Plate Stations

Abstract

Enclosed track plate stations are a common method to detect mammalian carnivores. Studies rely on these data to make inferences about geographic range, population status and detectability. Despite their popularity, there has been no effort to document inter-observer variation in identifying the species that leave their tracks. Four previous field crew leaders identified the tracks of carnivores and non-carnivores on 105 track sheets from enclosed track plate stations that were used in field studies in California. Because the identity of the species was unknown, we evaluated the consistency in identifications among the 4 observers. The observers were in agreement on the identity of tracks on 73.3% of the track sheets. Considering only the putative carnivore tracks, the agreement was higher (86.8%) and was higher still (95.4%) when the lowest quality carnivore tracks were excluded. American martens (*Martes americana*) and fishers (*M. pennanti*) are important species from a conservation perspective, and there was only one occasion of inter-observer disagreement. Observers were much less consistent in identifying non-carnivores, achieving consensus on only 37.1% of the opportunities. When observers have training and experience similar to those involved here, tracks should be considered a reliable method for verifying the identity of most of the species that visit track-plate stations. Our results indicate that inter-observer variation is unlikely to have affected conclusions from previously published reports about the distribution or abundance of carnivores. We caution, however, that observers refrain from identifying a track when the quality is poor and also to assign only the highest level of taxonomic resolution that is justified.

Introduction

Enclosed track plate stations have been used to detect, inventory and monitor a wide variety of species, particularly mesocarnivores (Zielinski 1995, Zielinski and Stauffer 1996, Nams and Gillis 2003, Zielinski et al. 2005, Wiewel et al. 2007, Ray and Zielinski 2008). Track impressions retain the best quality, and the greatest opportunity for preservation, when an animal steps on black soot and leaves a positive impression on a track-receptive white surface, usually a tacky piece of white shelving (contact) paper (Fowler and Golightly 1994, Ray and Zielinski 2008) (Figure 1). This method is unique, and thus produces tracks with characteristics that are not usually described in popular field guides (e.g., Halfpenny 1986, Elbroch 2003). Thus, few diagnostic keys or other resources are available to assist in identifying the tracks that are recorded on paper or aluminum substrates (for exceptions see: Taylor and Raphael 1988, Zielinski 1995, Orloff et al. 1993, http://www.fs.fed.us/psw/topics/wildlife/mammal/tracks.shtml). Track identity is often determined by a collection of quantitative and qualitative characteristics, which usually vary among practitioners.

We have been using enclosed track stations for many years, primarily for large-scale surveys targeting fishers (*Martes pennanti*) and American martens (*M. americana*) (e.g., Zielinski 1995, Zielinski et al. 2001, Zielinski et al. 2005). Other species of carnivores and non-carnivores, however, are also regularly detected during this work. As part of this research we developed protocols for the field work and for the management of data, both of which rely primarily on the judgment of a field crew leader for execution and quality control. These individuals render final decisions on the identity of tracks before the data are analyzed for other purposes. Because we have employed a number of field personnel on these projects, we became interested in quantifying the variation among these biologists in making a decision about the identity of tracks.

The field crew leader, without the consultation of the principal investigator, has been responsible for assigning an identity to each discernable track at the highest taxonomic resolution that they feel is justified. Because we rarely have

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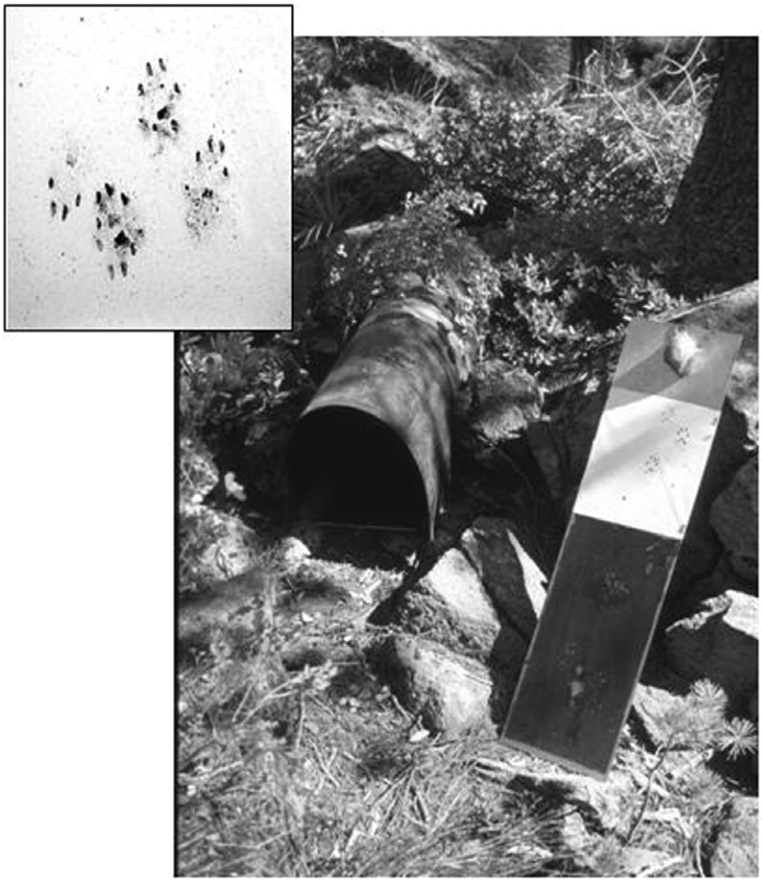

Figure 1. Enclosed track station as it would be deployed in the field. Inset: aluminum sheet with shelf/contact paper, tracks and bait.

companion cameras at the track stations, there is usually no independent method to verify the identity of the species that visited the track station. Unknown tracks are often compared to a library of voucher tracks that are known to be from particular species (i.e., captive animals that walked across track-receptive surfaces). Not all species are represented in these collections, however, nor are the tracks representative of both sexes, all ages, or all regions within the species geographic range. Thus, our goal here is to assess inter-observer variation and to determine whether the magnitude may jeopardize conclusions we make about the distribution and abundances of species that are the targets of this method. If agreement among trained observers is high we will be confident that the track-plate method, as we have applied it, is suitable for verifying the identity of species detected.

Methods

Four trained and experienced biologists were selected to be involved in the test, each of which had been supervised by the senior author and had at least 2 yrs of experience leading a carnivore survey crew using enclosed track stations as the primary detection method. During their training, the senior author worked closely with each of them to introduce them to the resources available to help them identify tracks, to highlight distinguishing characteristics of tracks of each species, and periodically to check their identifications.

Each observer was provided a photocopy of the same set of 105 sheets of contact paper (hereafter track sheets) (Figure 1) that were pre-selected by the authors to include a diversity of species of mammals that had been detected at track stations in the forests of northwestern California, the Cascade mountains of California, and the Sierra Nevada between 1996 and 2002. Species within the order Carnivora comprised the bulk of the test tracks, but other species of mammals that were routinely detected (primarily sciurid rodents and the Virginia opossum [*Didelphis virginiana*]) were also included. Tracks were selected that ranged from high to low quality. We adapted the 3 categories of track quality used by Slauson et al. (2008) such that each track on each track sheet was of quality 1 (best with all features identifiable), quality 2 (moderate clarity of features) or quality 3 (detail is reduced or obscured due to foot rotation, overlapping impressions, smudging, or moisture). If there was more than one track from a species on a track sheet, quality was assigned to the highest-quality track.

Each observer was asked to identify all of the species that were apparent to them on each contact sheet, excluding "mice" (i.e., Cricetidae). We asked observers to identify each species to the highest taxonomic resolution that they felt was justified. We expected this to vary among observers given that we established no standards. For example, a quantitative means for distinguishing the tracks of *Mustela erminea* and *M. frenata* is not available, so the most conservative identification for either of these species would be "*Mustela* sp." even though some observers may believe they have sufficient information to distinguish these species. This is in contrast to, for example, the fisher (*Martes pennanti*) and the American marten (*M. americana*) that can be distinguish with confidence based on a published algorithm (Zielinski and Truex 1995). We did not count as disagreements the occasions when one or more observers deviated from the others by using a different level of taxonomic resolution because post-hoc editing of the record would resolve this disagreement. Differences in resolution occurred with the weasels and for domestic versus wild canids and felids.

Observers were forbidden from consulting with one another and were asked to use only the same set of resources that were at their disposal when they were identifying tracks that came directly from the field during the course of their supervisory responsibilities. This included standard field guides, a guide to tracks collected on sooted aluminum (Taylor and Raphael 1988), and a set of voucher tracks from 8 species (noted in Appendix) that were verified because they were created by captive individuals (http://www.fs.fed.us/psw/topics/wildlife/mammal/tracks.shtml). The observers were also encouraged to take the same amount of time as they would normally take to render an identification from a field sample. The observers wrote the name of each of the species of mammal that they could identify on the photocopy, or submitted a spreadsheet that included this same information. The names of each species or taxa were entered into a database and subjected to analysis to address the following criteria:

Percent agreement: the percent of times when all 4 observers provided the same answer for each species that occurred on the track sheet, excluding "mice."

Percent agreement—Carnivore species only: the percent of times when all 4 observers provided the same answer when a track was apparently from a mammalian carnivore.

Percent agreement—Non-carnivore species only: the percent of times when all 4 observers provided the same answer when a track was apparently from a species other than a mammalian carnivore, excluding "mice."

Percent agreement—Single species vs. ≥ 2 species: the percent of times when all 4 observers provided the same answer when there were tracks from only 1 species on a track sheet compared to when there was more than 1 species (carnivore or non-carnivore) on a track sheet.

We were also interested in whether there were patterns in the species that were most commonly overlooked by one or more observers (for carnivores and non-carnivores), whether track quality affected the agreement between observers, and whether some pairs of species were confused with one another more than other pairs of species.

Results

The 105 track sheets had one or more tracks from a total of 131 species (excluding mice) that we assumed could be identifiable by most observers (1.24 species/track sheet). Eighty-six track sheets had the tracks from at least one species of carnivore; 13 (15.1%) of which also included a non-carnivore. Thirty-five sheets had only tracks of one or more species of non-carnivore. These 86 sheets had 91 tracks (one or more impressions) from presumed species of carnivores because several sheets had tracks from > 1 species of carnivore. All 4 observers came to the identical conclusion about the identity of all the tracks on 77 of the 105 sheets (73.3%), regardless of the number of tracks from different species that were on the track sheet and whether they were from a carnivore or not (Figure 2, Appendix). Conversely, the conclusion of one or more observer differed from the others regarding the identity of at least one track on 26.7% of the track sheets.

Percent Agreement—Carnivore Species

Observers were generally very consistent in their identifications of carnivores (see Appendix). All 4 observers came to the identical conclusion about the identity of species of carnivores on an individual contact sheet on 79 of the 91 occasions (86.8%) (Figure 2). Of the 12 track sheets (13.2%) for which an inconsistency was reported, one or more observers either overlooked a species

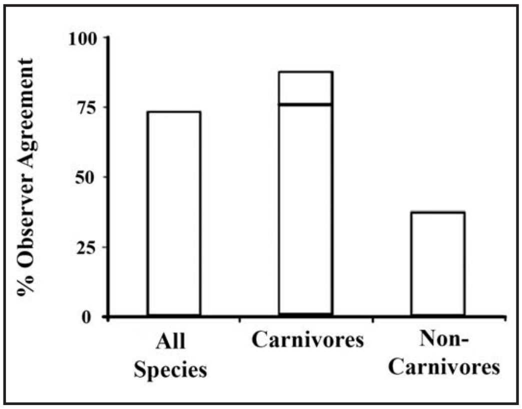

Figure 2. Percent of track sheets in which all 4 observers arrived at the same conclusion regarding the identity of all tracks (excluding "mice'). The line in the bar for "Carnivores' reflects the percent that would have been achieved had we considered variation in taxonomic resolution (e.g., *Mustela frenata* vs. *Mustela* sp.) as an inconsistency among observers.

of carnivore that others detected, or the conclusion about a track differed among the observers. Typically these inconsistencies occurred when a track was of poor quality. Among the set of tracks that were of higher quality (quality = 1 or 2), the proportion for which observers reached consensus was 95.4%. Conversely, when track quality was poor (quality = 3) consensus was achieved only 30.0% of the time.

There was only 1 occasion when a marten or a fisher track was either overlooked, identified by one observer but not the others, or identified as another species (see Appendix, sample 37). In this case, a single observer considered one of several tracks to be from a marten whereas the other 3 observers considered it from a canid. This track, however, was of poor quality (quality = 3), with indistinct and overlapping track impressions. All 4 observers were consistent in their identification of a *Martes* track on the 21 contact sheets that had one or more putative *Martes* tracks. This was surprising, given the general similarity of tracks of fishers and martens (especially of the tracks of male martens and female fishers). All observers had at their disposal a published algorithm to distinguish the tracks of the closely related marten and fisher (Zielinski and Truex 1995), and they used it when they felt it was necessary. This may have accounted for their nearly unanimous agreement in distinguishing tracks of the martens and fishers.

Percent Agreement—Non-Carnivore Species

A total of 35 sheets had tracks that one or more observer concluded were from a species other than a carnivore (see Appendix). All non-carnivore tracks were identified as either a sciurid rodent or opossum. In only 13 of the 35 instances (37.1%) did all 4 observers agree on the identity of non-carnivore tracks (Figure 2). Observers achieved consensus identifying distinctive opossum tracks on 100% of the occasions (9 of 9 track sheets) but were generally very inconsistent in their identifications of sciurids. For example, there were 17 track sheets where one or two observers concluded that a sciurid track was present, but the others did not.

Percent Agreement—Single vs. ≥ 2 species

Observers were very consistent in their identification of carnivore species when they detected only a single carnivore on a contact sheet. Complete agreement of all 4 observers occurred in 67 of the 71 instances when this situation occurred (94.4%). However, when there were tracks from ≥ 2 species on a track sheet, and at least one was a carnivore, the carnivore was overlooked on 5 occasions by a single observer (5.5% of 91 identifiable tracks from a species of carnivore on the 86 sheets with carnivore tracks), but not always the same observer. The taxa overlooked by at least one observer included black bear (*Ursus americana*), *Felis* sp., *Mustela* sp., gray fox (*Urocyon cinereoargenteus*), and spotted skunk (*Spilogale gracilis*). Non-carnivores, however, were more often overlooked when there were ≥ 2 species on the contact sheet (8 of the 40 potentially identifiable non-carnivore tracks: 20.0%).

Discussion

It is important to estimate the distribution and abundance of carnivores correctly, given their role in ecosystem function and provision of services (Terborgh et al. 2001, Dobson et al. 2006), and the fact that they are often the most threatened and uncommon species in a community (Duffy 2002, Cardillo et al. 2004, Laliberte and Ripple 2004). Collecting track impressions is one of a number of methods of sampling animal occurrence that results in verifiable methods of sample collection; the others include photographs and genetic sampling (Kays and Slauson 2008, Schwartz and Monfort

2008). However, all of the verifiable methods have the potential for errors that can lead to errors of omission (being overlooked) and commission (being mistaken for another species). We found that experienced and trained observers were very consistent at identifying the tracks of carnivores: the group of mammals which were the targets for the surveys. If our data are representative, there is an approximately 87% chance that 4 trained and experienced observers would reach consensus about the identification of a track, from species of mammalian carnivore that occurs in the forests of California. If observers were instructed to disregard tracks of the poorest quality (which, in this test, they were not), they would be expected to achieve agreement in 95.4% of the opportunities.

It was also reassuring that observers agreed on the identity of all but one of the tracks identified as either marten or fisher, the two species of carnivores in California that have received most of the conservation attention. A number of papers have been published addressing the distribution and population status of these species on the assumption that the identity of their tracks are made correctly and consistently (e.g., Zielinski et al. 1995, Kucera et al. 1995, Carroll et al. 1999, Zielinski et al. 2001, Davis et al. 2007). The inconsistency by one observer, an apparent error of commission, was likely due to the poor quality track and the fact that observers were expected to identify track from each species on each sheet, regardless of quality. This highlights a need to encourage observers to abstain from a definitive identification when a track is indistinct.

Marten and fisher tracks are most confusing when comparing the track of male martens with female fishers, due to intrasexual size dimorphism. We did not know the gender of each species that created the track, but observers were consistent in their identifications nonetheless. However, there is a recently published method to distinguish the tracks of the sexes of martens and fishers (Slauson et al. 2008). Thus, in the future, in addition to the quantitative method to distinguish martens and fishers (Zielinski and Truex 1995), biologists will find it possible to distinguish the sexes from tracks of each of these species.

Many of the inconsistencies in identities of carnivore species occurred when one or more observer reported the identity of a species using different levels of taxonomic resolution. For example, there is currently no quantitative method to distinguish the tracks of the two species of weasels that occur in California (*Mustela frenata* and *M. erminea*), nor can we distinguish the tracks of domestic cats from bobcats or domestic dogs from wild canids. Until such methods are developed, these types of discrepancies can be adjusted *post-hoc* by choosing to identify at a taxonomic level above species (i.e., genus), in which consistency could be virtually guaranteed. This approach will result in consistent final identifications, but not at the level of species for members of the 3 pairs listed above. That some observers believe that they can identify species within these pairs highlights the need to bring new research effort to bear on developing quantitative methods to discriminate between groups of species with similar tracks.

Previous experiences had indicated that the tracks of the ringtail (*Bassariscus astutus*) and the western spotted skunk (*Spilogale gracilis*) would be confusing because they are of similar size and can have similar patterns. Thus, it was interesting that in 22 instances where a track sheet had tracks from one of these two species, they were never confused. An observer never identified a track as a spotted skunk when another observer called it a ringtail, or visa versa. Apparently careful attention to the details of the tracks (e.g., as described in Taylor and Raphael [1988]), and available voucher tracks, was sufficient to arrive at unanimous conclusions about the identity of the tracks of these species.

It was clear that the observers, in general, were less qualified to identify the tracks of non-carnivores than carnivores. This was particularly true when there were ≥ 2 tracks on the same sheet. This is not surprising since the observers had participated in research where identifying species of rodents was not a priority and because there is a dearth of literature describing methods to distinguish tracks of rodents, especially the sciurids for which observers were universally inconsistent in their identifications. It was important, however, that field crew leaders could distinguish carnivore from sciurid tracks and, with few exceptions, observers did not generally confuse a sciurid for a carnivore track, or visa versa. The 3 exceptions were similar and occurred when 1 observer concluded a track was a spotted skunk, and the other 3 observers concluded that the track was from a rodent (either *Spermophilus* sp. or *Sciurus* sp.). Thus, we recommend special attention be paid to emphasizing the characteristics that distinguish these particular taxa.

Because most of the inconsistencies affected species other than martens and fishers, the results presented here are unlikely to affect how previously published research on these two rare species should be interpreted. It is unlikely, for example, that misidentifications affected the habitat suitability models built from detection data (e.g., Carroll et al. 1999, Davis et al. 2007) or will affect plans to monitor, using detection arrays, the status of martens or fishers over time (e.g., Zielinski and Stauffer 1996, Zielinski and Mori 2001). Nonetheless, misidentifications of other species are likely to occur. It would be enlightening to compare the rates of disagreement reported here for track plates with rates of inconsistent species identification from other methods such as remotely triggered cameras and genetic methods (e.g., Paetkau 2003)

Our assessment of inter-observer consistency should be considered a best-case scenario, in that all observers had multiple years of experience as field crew leaders that were responsible for rendering final decisions about the identity of tracks. We would expect that observers with less experience are less accurate and consistent, and we strongly suggest that final determinations of track identities be made by individuals that have achieved competency. We recommend that standard training procedures be used to assure that personnel that are responsible for final identifications are competent. We recommend an approach similar to that employed the southern Sierra fisher population monitoring program (Truex 2008, Truex and Zielinski 2008). In this program, crew members are provided classroom training about how to discriminate between carnivore species that have similar tracks, between tracks of sciurids that superficially resemble tracks of carnivores, and when to determine that track quality is too poor for a species identification to be rendered. Employees are then given a test, using 75 example track sheets, to evaluate their competency (R. Truex, pers. comm.).

We also encourage the development of quantitative methods to distinguish species whose tracks can be confused. An algorithm exists to distinguish marten and fisher tracks (Zielinski and Truex 1995); the development of similar methods to distinguish domestic dogs and cats from wild canids and felids, respectively, and to distinguish species within *Mustela* would greatly improve the information that can be extracted from track impressions.

Finally, recall that the best we could accomplish in this exercise was to measure consistency among observers. It was impossible to determine the accuracy of each observer, since the truth about the identity of a species that left a track was unknown. Given the high level of agreement among our experienced observers, however, their efforts probably comes closest to confirming the identity of the species that produced the tracks, in the absence of independent verification from photograph or genetic analysis. When observers have training and experience similar to those involved here, we believe that tracks on contact sheets can be a reliable method for verifying the identity of most species, and fulfill the evidentiary standard required for occurrence data (see McKelvey et al. 2008). If proficiency cannot be achieved, we recommend that the tracks be sent to experienced biologists for review or that cameras or hair snares be included at some of the track-plate stations to verify the species' identity via a second method.

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APPENDIX. Results of the species identifications provided by 4 trained observers when presented with 105 track sheets from enclosed track-plate stations deployed in the field in California. Species abbreviations (asterisks indicate the 8 species for which observers had known identity, voucher, track examples): BAAS = *Bassariscus astutus*, CASP = unknown canid, DIVI* = *Didelphis virginiana*, FECA = *Felis catus*, PUCO = *Puma concolor*, LYRU* = *Lynx rufus*, FESP = unknown felid, GLSA* = *Glaucomys sabrinus*, MAAM* = *Martes americana*, MAPE* = *Martes pennanti*, MEME = *Mephitis mephitis*, MUFR* = *Mustela frenata*, MUSP = *Mustela* species, NEFU = *Neotoma fuscipes*, NESP = *Neotoma* species, SCGR =*Sciurus griseus*, SCSP = unknown squirrel, SPBE* = *Spermophilus beecheyi*, SPLA* = *Spermophilus lateralis*, TADO = *Tamiasciurus douglasii*, TASP = *Tamias* species, URAM = *Ursus americanus*, URCI = *Urocyon cinereoargenteus*. All nomenclature is according to Wilson and Reeder (2005).

Track Sheet Number	Observer 1	Observer 2	Observer 3	Observer 4	Track Quality[1]
1	URCI	URCI	URCI	URCI	1
2	DIVI	DIVI	DIVI	DIVI, SPGR	2,2
3	BAAS	BAAS	BAAS	BAAS	1
4	BAAS, URCI	BAAS, URCI	BAAS, URCI	BAAS, URCI	1
5	BAAS, URAM	BAAS, URAM	BAAS	BAAS, URAM	1,3
6	URCI	URCI	URCI	URCI	2
7	SPGR	SPGR	SPGR	SPGR	1
8	BAAS	BAAS	BAAS	BAAS	1
9	SPLA	SCSP	SPLA	SPLA, TASP	1,1
10	MEME	MEME	MEME	MEME	2
11	FESP, URCI	URCI	FECA, URCI	FESP, URCI	1,2
12	FESP	FESP	FECA	FESP	1
13	DIVI	DIVI	DIVI	DIVI	1
14	MAAM	MAAM	MAAM	MAAM	1
15	BAAS	BAAS	BAAS	BAAS	1
16	MAPE	MAPE	MAPE	MAPE	2
17	SCSP	SCSP	TASP	SPLA	2
18	SPLA	TASP	TASP	TASP	1
19	URCI	URCI	URCI	URCI	1
20	MUSP	MUSP	MUSP	MUSP	1
21	MEME	MEME	MEME	MEME	2
22	MAAM	MAAM	MAAM	MAAM	1
23	SCSP	SCSP	SPLA	SPLA	1
24	SPGR	SPGR	SPGR	SPGR	1
25	MAPE	MAPE	MAPE	MAPE	1
26	MAAM	MAAM	MAAM	MAAM	1
27	FESP	FESP	FESP	LYRU	1
28	BAAS, DIVI	BAAS, DIVI	BAAS, DIVI	BAAS, DIVI	1,1
29	MEME	MEME	MEME	MEME	1
30	MAAM	MAAM	MAAM	MAAM	1
31	SCGR	SCSP	SPBE	SPBE	2
32	Mice only	Mice only	MUSP	MUSP	3
33	PUCO	CASP	PUCO	PUCO	1
34	SCSP	TASP	TASP	SPLA	1
35	DIVI	DIVI	DIVI	DIVI	1
36	DIVI	DIVI	DIVI	DIVI	1
37	CASP	SCSP	MAAM, SPLA	SPLA, URCI	1,3
38	FESP	FESP	LYRU	LYRU	1
39	SPGR	SPGR	SPGR	SPGR	2
40	SCGR	SCSP	SPBE	SPBE	2
41	SCSP	Mice only	SCSP	SPGR	3
42	MAAM	MAAM	MAAM	MAAM	1
43	MAAM	MAAM	MAAM	MAAM	1
44	SCSP	TASP	MUSP, TASP	MUSP, TASP	1,3
45	FESP	FESP	FECA	FESP	1
46	FESP	FESP	FECA	FESP	1
47	DIVI	DIVI	DIVI	DIVI	1
48	MAAM	MAAM	MAAM	MAAM	1
49	MAAM	MAAM	MAAM	MAAM	2

Track Sheet Number	Observer 1	Observer 2	Observer 3	Observer 4	Track Quality[1]
50	GLSA, URCI	URCI	TADO, URCI	TADO, URCI	1,1
51	MAPE	MAPE	MAPE	MAPE	2
52	SPGR	SPGR	SPGR	SPGR	1
53	DIVI	DIVI	DIVI	DIVI	1
54	SCSP	TASP	SPLA, TASP	SPBE, SPLA, TASP	2,2
55	MAAM	MAAM	MAAM	MAAM	1
56	MEME	MEME	MEME	MEME	2
57	SPGR	SPGR	SPGR	SPGR	1
58	MEME, SCSP	MEME	MEME, TASP	MEME, TASP	2,1
59	BAAS	BAAS	BAAS	BAAS	2
60	MEME	MEME	MEME	MEME	1
61	BAAS	BAAS	BAAS	BAAS	1
62	MUSP	MUSP	MUFR	MUSP	1
63	MUSP	MUSP	MUSP	MUSP	2
64	MAPE	MAPE	MAPE	MAPE	1
65	MAPE, TASP	MAPE	MAPE, TASP	MAPE, TASP	1,1
66	DIVI	DIVI	DIVI	DIVI	1
67	URCI	URCI	URCI	URCI	1
68	MUSP	MUSP	MUFR	MUSP	1
69	SCSP	TASP	TASP	TASP	2
70	BAAS	BAAS	BAAS, TADO	BAAS, TADO	2,1
71	BAAS, MAPE	BAAS, MAPE	BAAS, MAPE	BAAS, MAPE	1,1
72	BAAS, URCI	BAAS, URCI	BAAS, URCI	BAAS, URCI	1,1
73	MAPE	MAPE	MAPE	MAPE	1,1
74	URAM, BAAS	BAAS, URAM	BAAS	BAAS, URAM	1,3
75	MEME	MEME	MEME	MEME	2
76	FESP	FESP	LYRU	FESP	1
77	MAPE	MAPE	MAPE	MAPE	2
78	SPLA	TASP	SPLA	SPLA	1
79	DIVI	DIVI	DIVI	DIVI	2
80	SCSP	TASP	SPLA, TASP	SPLA, TASP	1,1
81	MAPE	MAPE	MAPE	MAPE	2
82	MAPE	MAPE	MAPE	MAPE	1
83	MAAM, SCSP	MAAM	MAAM, TASP	MAAM, TASP	1,2
84	DIVI, URCI	DIVI	DIVI, URCI	CASP, DIVI	3,3
85	MUSP	MUSP	MUSP	MUSP	1
86	MUSP	MUSP	MUFR	MUSP	1
87	SPGR	SPGR	SPGR	SPGR	1
88	SPGR	SPGR	SPGR	SPGR	1
89	FESP, SCSP	FESP, SPBE	FESP, SPBE	LYRU, SPBE	1,1
90	BAAS	BAAS	BAAS	BAAS, TADO	2,2
91	URCI	URCI	URCI	URCI	2
92	CASP, MEME	MEME, URCI	MEME, URCI	MEME, URCI	1,1
93	GLSA, MEME	MEME	MEME, TASP	MEME, TASP	1,1
94	SPGR	SPGR	SPGR	SPGR	1
95	TADO	Mice only	TASP	Mice only	1
96	MEME	MEME	MEME	MEME	2
97	MUSP	MUSP	MUSP	MUSP	1
98	URCI	URCI	URCI	URCI	1
99	MAAM	MAAM	MAAM	MAAM	1
100	MEME	MEME	MEME	MEME	1
101	MUSP	MUSP	MUSP	MUSP	2
102	URCI	URCI	URCI	URCI	3
103	FESP, NEFU	FESP, NEFU	FESP, NESP	LYRU, NESP	1,3
104	URCI	URCI	URCI	URCI	1
105	SPGR	SPGR	SPGR	SPGR	1

[1]Quality 1, 2 and 3 are tracks of decreasing clarity, respectively. There is one number for each track on the sheet; the first referring to the smaller of the 2 tracks.